FIG. 1

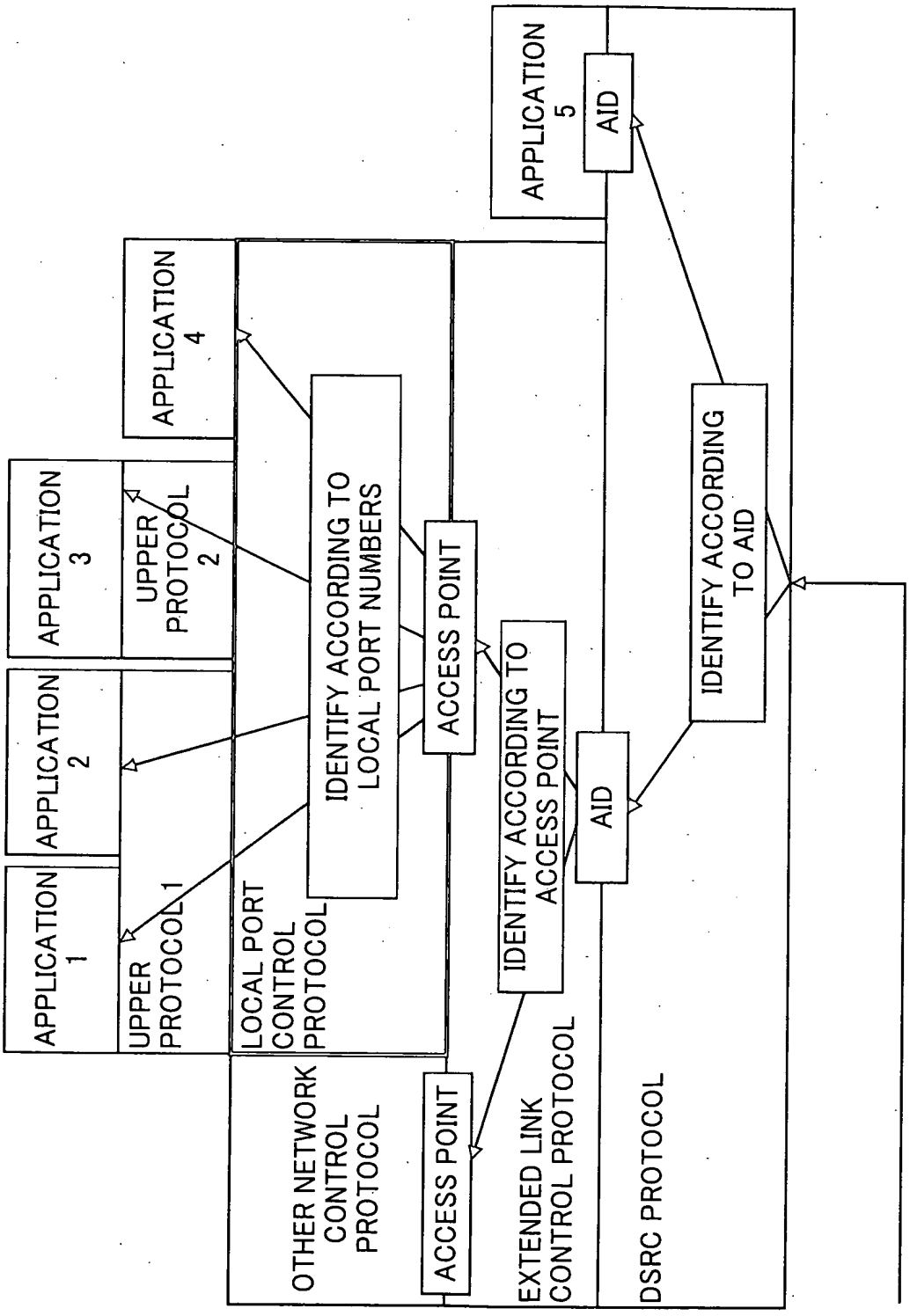

APPLICATION 1
APPLICATION 2
APPLICATION 3
APPLICATION 4
APPLICATION 5
UPPER PROTOCOL 1
UPPER PROTOCOL 2
AID
AID
LOCAL PORT CONTROL PROTOCOL
IDENTIFY ACCORDING TO LOCAL PORT NUMBERS
ACCESS POINT
IDENTIFY ACCORDING TO ACCESS POINT
IDENTIFY ACCORDING TO AID
OTHER NETWORK CONTROL PROTOCOL
ACCESS POINT
EXTENDED LINK CONTROL PROTOCOL
DSRC PROTOCOL

FIG. 2

LOCAL PORT NO.	APPLICATION	REMARKS
0	UNUSED	
1 TO 0x07FF	SAME AS DEFINITION OF UDP PORT NUMBER	SAME AS PORT ASSIGNMENT FOR UDP APPLICATION SPECIFIED IN RFC 1700
0x0800	UNUSED	
0x0801	DEFAULT NCP	RECEIVING PORT FOR BASE STATION APPLICATION IN TAG-TYPE TERMINAL
0x0802	ECHO	RECEIVING PORT FOR ECHO SERVICE
0x0803	ECHO REPLY	RECEIVING PORT FOR REPLY TO ECHO
0x0804 TO 0x0807	RESERVED FOR ID NOTIFICATION APPLICATION	RECEIVING PORT FOR APPLICATION IMPLEMENTING ID NOTIFICATION SERVICE FOR TERMINALS OTHER THAN TAG-TYPE TERMINAL
0x0808 TO 0x080F	RESERVED FOR PUSH-TYPE DELIVERY APPLICATION	RECEIVING PORT FOR APPLICATION PROVIDING PUSH-TYPE INFORMATION
0x0810 TO 0x085F	RESERVED FOR CHARGING/PAYMENT	RECEIVING PORT FOR APPLICATION IMPLEMENTING CHARGING SERVICE
0x0851 TO 0x0FFE	RESERVED FOR DSRC NON-NETWORK-TYPE APPLICATION	
0x0FFF	LOCAL PORT PROTOCOL MANAGEMENT SERVICE	RECEIVING PORT FOR LOCAL PORT PROTOCOL MANAGEMENT SERVICE
0x1000 TO 0xFFFF	ARBITRARY PORT	

FIG. 3

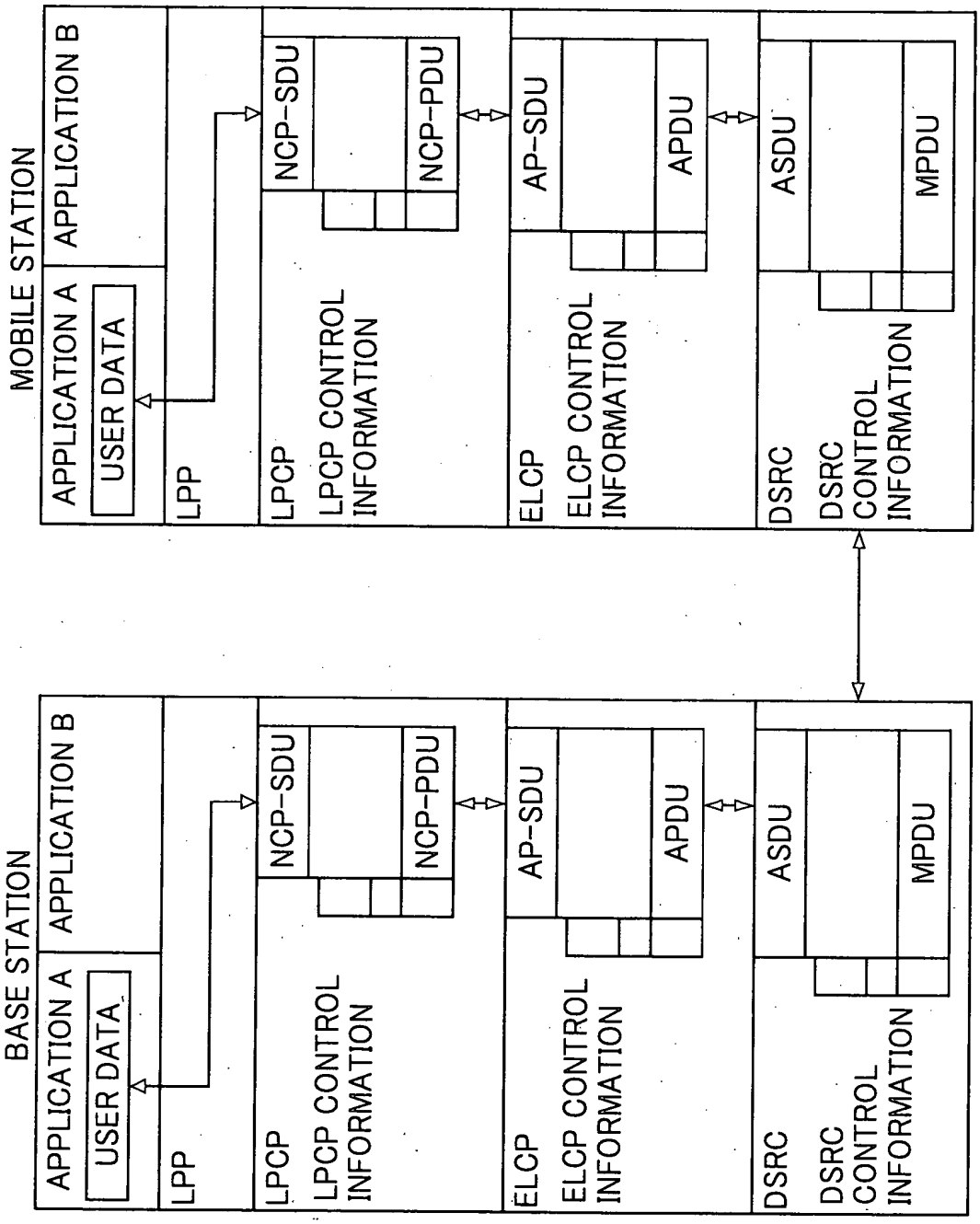

MOBILE STATION
APPLICATION A
USER DATA
APPLICATION B
LPP
LPCP
LPCP CONTROL INFORMATION
NCP-SDU
NCP-PDU
ELCP
ELCP CONTROL INFORMATION
AP-SDU
APDU
DSRC
DSRC CONTROL INFORMATION
ASDU
MPDU
BASE STATION
APPLICATION A
USER DATA
APPLICATION B
LPP
LPCP
LPCP CONTROL INFORMATION
NCP-SDU
NCP-PDU
ELCP
ELCP CONTROL INFORMATION
AP-SDU
APDU
DSRC
DSRC CONTROL INFORMATION
ASDU
MPDU

FIG. 4

PRIMITIVE TYPE	ABBREVIATION	DESCRIPTION
REQUEST	REQ	USED WHEN AN UPPER LAYER REQUESTS A SERVICE FROM A LOWER LAYER.
INDICATION	IND	USED WHEN A LOWER LAYER NOTIFIES AN UPPER LAYER OF A SERVICE FROM THE COUNTERPART.

FIG. 5

SYMBOL	DESCRIPTION
M (MANDATORY)	MANDATORY PARAMETER
O (OPTIONAL)	OPTIONAL PARAMETER
(=)	INDICATES THAT THE PARAMETER VALUE IS EQUIVALENT TO THE VALUE OF THE IMMEDIATELY PRECEDING PRIMITIVE ("REQ" IN THE CASE OF "IND").

FIG. 6

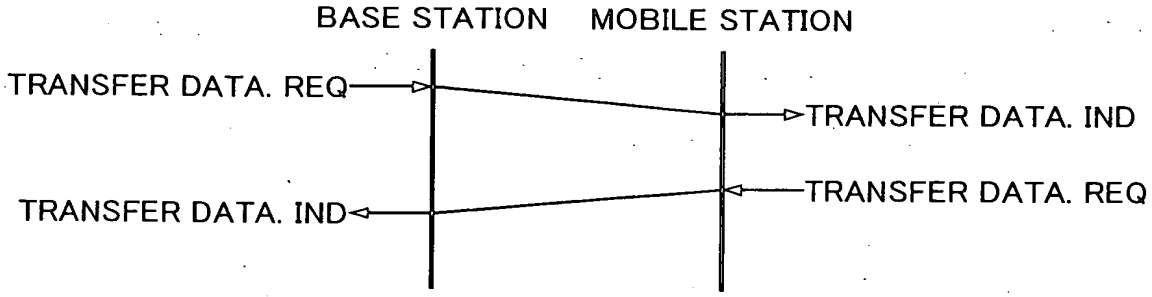


FIG. 7

PRIMITIVE PARAMETER	TRANSFER DATA	
	REQ	IND
LINK ADDRESS	M	M(=)
SOURCE PORT	M	M(=)
DESTINATION PORT	M	M(=)
USER DATA SIZE	M	M(=)
USER DATA	O	O(=)

FIG. 8

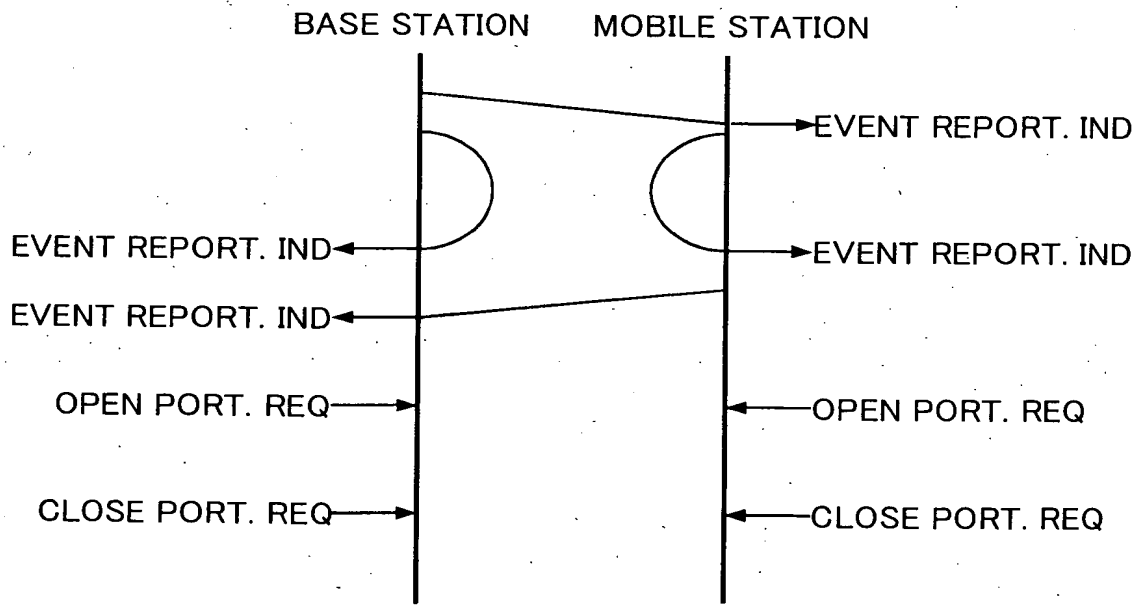


FIG. 9

PRIMITIVE PARAMETER	EVENT REPORT	
	REQ	IND
LINK ADDRESS	–	M(=)
EVENT CODE	–	M(=)
EXTENTION PARAMETER	–	M(=)

FIG. 10

PRIMITIVE PARAMETER	OPEN PORT
	REQ
PORT	M
TYPE	O
CODE	O

FIG. 11

PRIMITIVE PARAMETER	CLOSE PORT
	REQ
PORT	M

FIG. 12

PORT NO	PRIMITIVE TYPES	EVENT CODES

FIG. 13

LID	EQUIPMENT ID

FIG. 14

	7 (MSB)	6	5	4	3	2	1	0 (LSB)
1	ACCESS POINT IDENTIFIER LOCAL PORT CONTROL (1)				PROTOCOL IDENTIFIER MESSAGE (0)			
2	SOURCE LOCAL PORT NUMBER (HIGH-ORDER)							
3	SOURCE LOCAL PORT NUMBER (LOW-ORDER)							
4	DESTINATION LOCAL PORT NUMBER (HIGH-ORDER)							
5	DESTINATION LOCAL PORT NUMBER (LOW-ORDER)							
6	LENGTH OF USER DATA PORTION							
	CONTENTS OF USER DATA PORTION							

FIG. 15

PROTOCOL IDENTIFIER	DESCRIPTION	OPTION FIELD TYPE
0	DATA TRANSFER	LPCP TRANSFER DATA PDU TYPE
1	EVENT NOTIFICATION	LPCP EVENT PARAMETER TYPE
2-15	RESERVATION	

FIG. 16

	7 (MSB)	6	5	4	3	2	1	0 (LSB)
1	ACCESS POINT IDENTIFIER LOCAL PORT CONTROL (1)				PROTOCOL IDENTIFIER EVENT REPORT (1)			
2	EVENT CODE "EVENT CODE"							
3	LENGTH OF "EXTENSION PARAMETER"							
	CONTENTS OF "EXTENSION PARAMETER"							

FIG. 17

EVENT CODE	DESCRIPTION	NOTIFICATION TARGET	CONTENTS OF "EXTENSION PARAMETER"
0	PROHIBITED TO USE.		NONE
1-3	NOT USE.		NONE
4	DATA SIZE HAS EXCEEDED THE UPPER LIMIT VALUE.	LOCAL STATION	
5	SENDING SERVICE HAS BEEN ABORTED	LOCAL STATION	
6	DESIGNATED GROUP BROADCAST ADDRESS IS INVALID.	LOCAL STATION	
7-93	RESERVED FOR FUTURE USE		NONE
94-95	NOT USE.		NONE
96	CONNECTION NOTICE	LOCAL STATION	STORE "USER PROFILE" TYPE PARAMETER
97	DISCONNECTION NOTICE	LOCAL STATION	STORE "USER PROFILE" TYPE PARAMETER
98-127	RESERVED FOR FUTURE USE		
128	DSRC IS NOT CONNECTED.	LOCAL STATION	
129	DESTINATION PORT IS INVALID.	OPPOSITE STATION	STORE "INVALID PORT" TYPE PARAMETER
130-255	RESERVED FOR FUTURE USE		

Title: ROADSIDE-TO-VEHICLE COMMUNICATION SYSTEM
Inventors: IKAWA et al.
Atty Docket No.: 403586
Leydig, Voit & Mayer 202-737-6770

FIG. 18

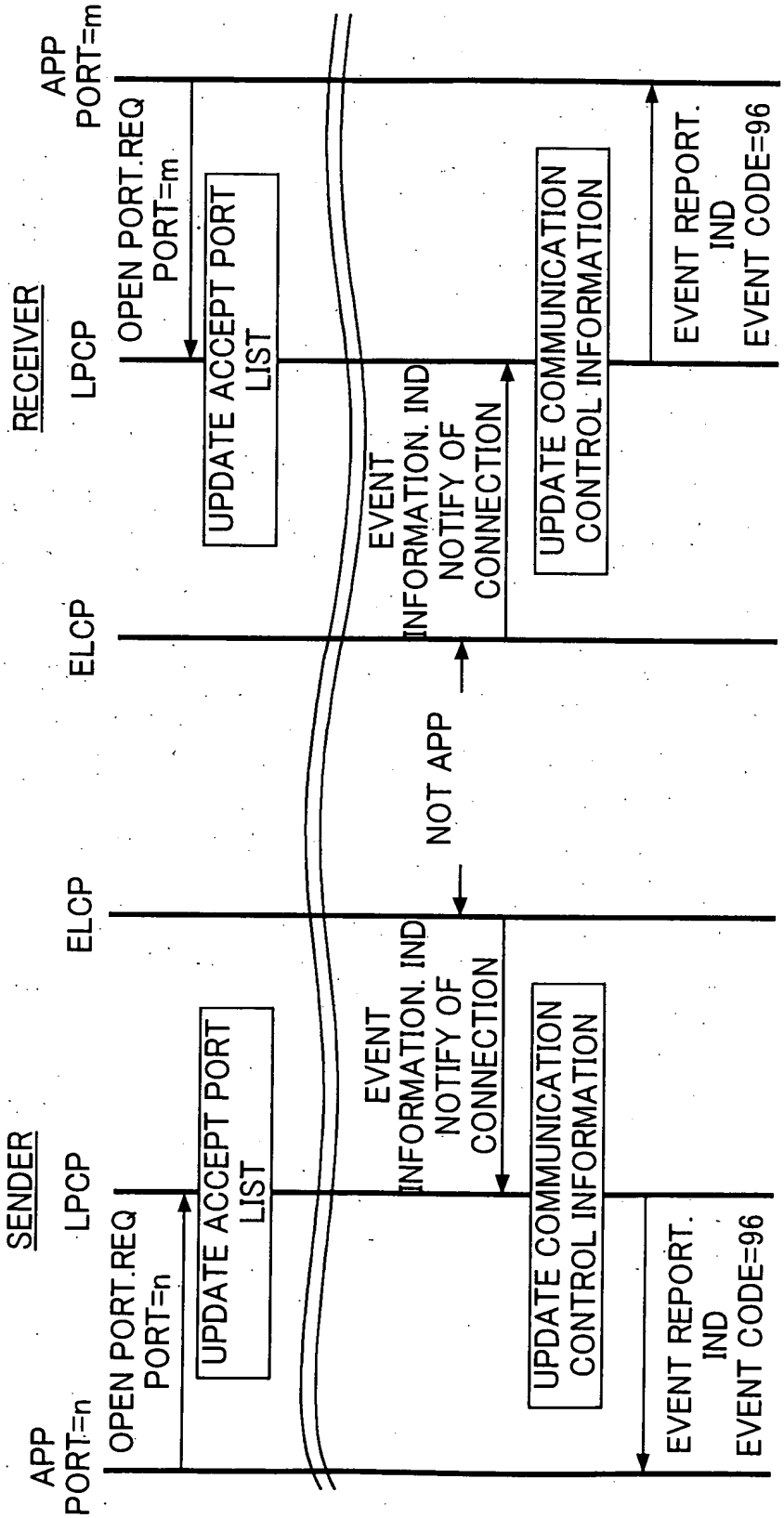

RECEIVER
SENDER
APP PORT=m
APP PORT=n
LPCP
ELCP
OPEN PORT.REQ PORT=m
OPEN PORT.REQ PORT=n
UPDATE ACCEPT PORT LIST
EVENT INFORMATION. IND NOTIFY OF CONNECTION
NOT APP
UPDATE COMMUNICATION CONTROL INFORMATION
EVENT REPORT. IND EVENT CODE=96

FIG. 19

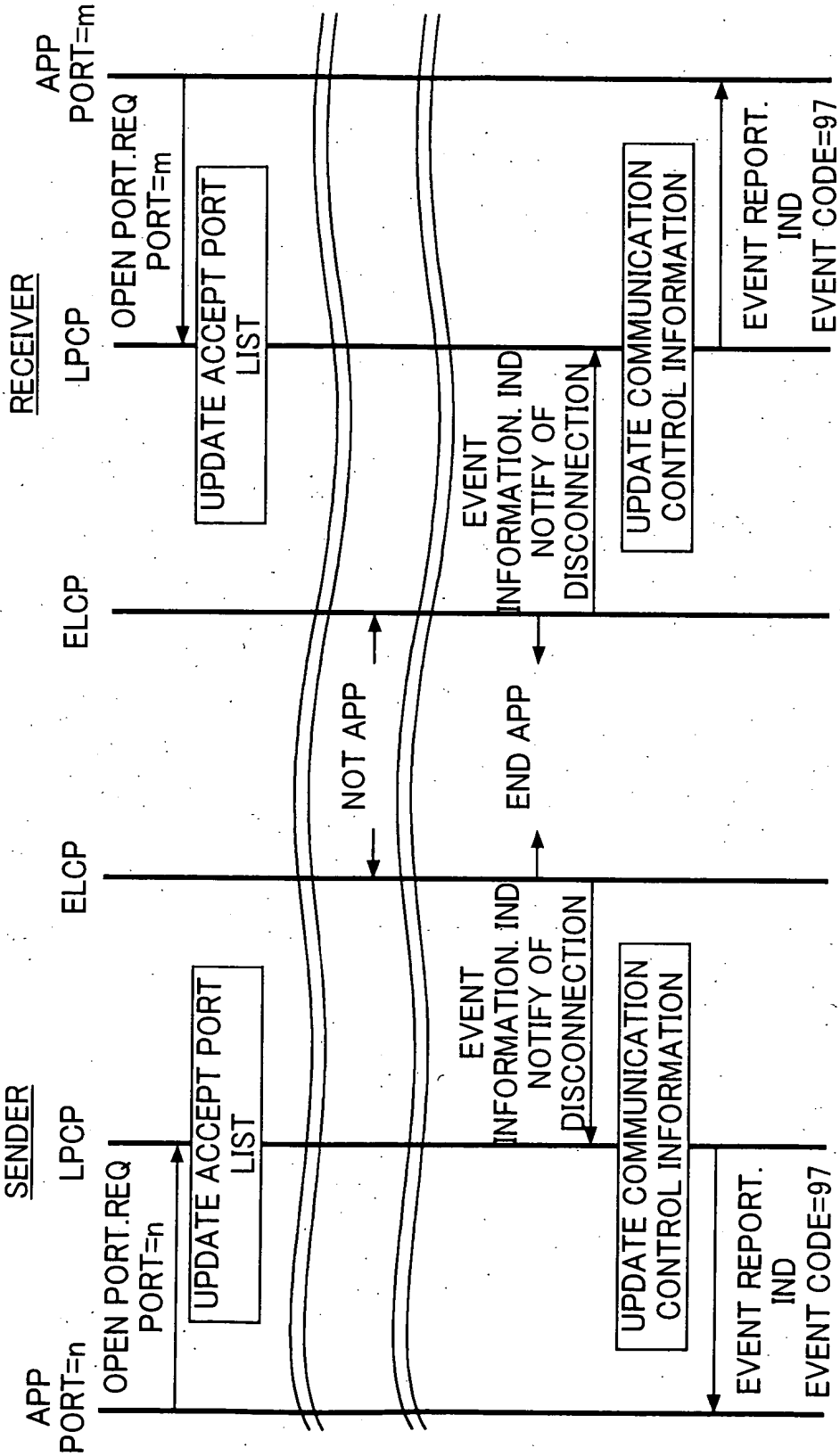

RECEIVER
SENDER
APP PORT=m
APP PORT=n
LPCP
ELCP
OPEN PORT.REQ PORT=m
OPEN PORT.REQ PORT=n
UPDATE ACCEPT PORT LIST
NOT APP
END APP
EVENT INFORMATION. IND NOTIFY OF DISCONNECTION
UPDATE COMMUNICATION CONTROL INFORMATION
EVENT REPORT. IND EVENT CODE=97

FIG. 20

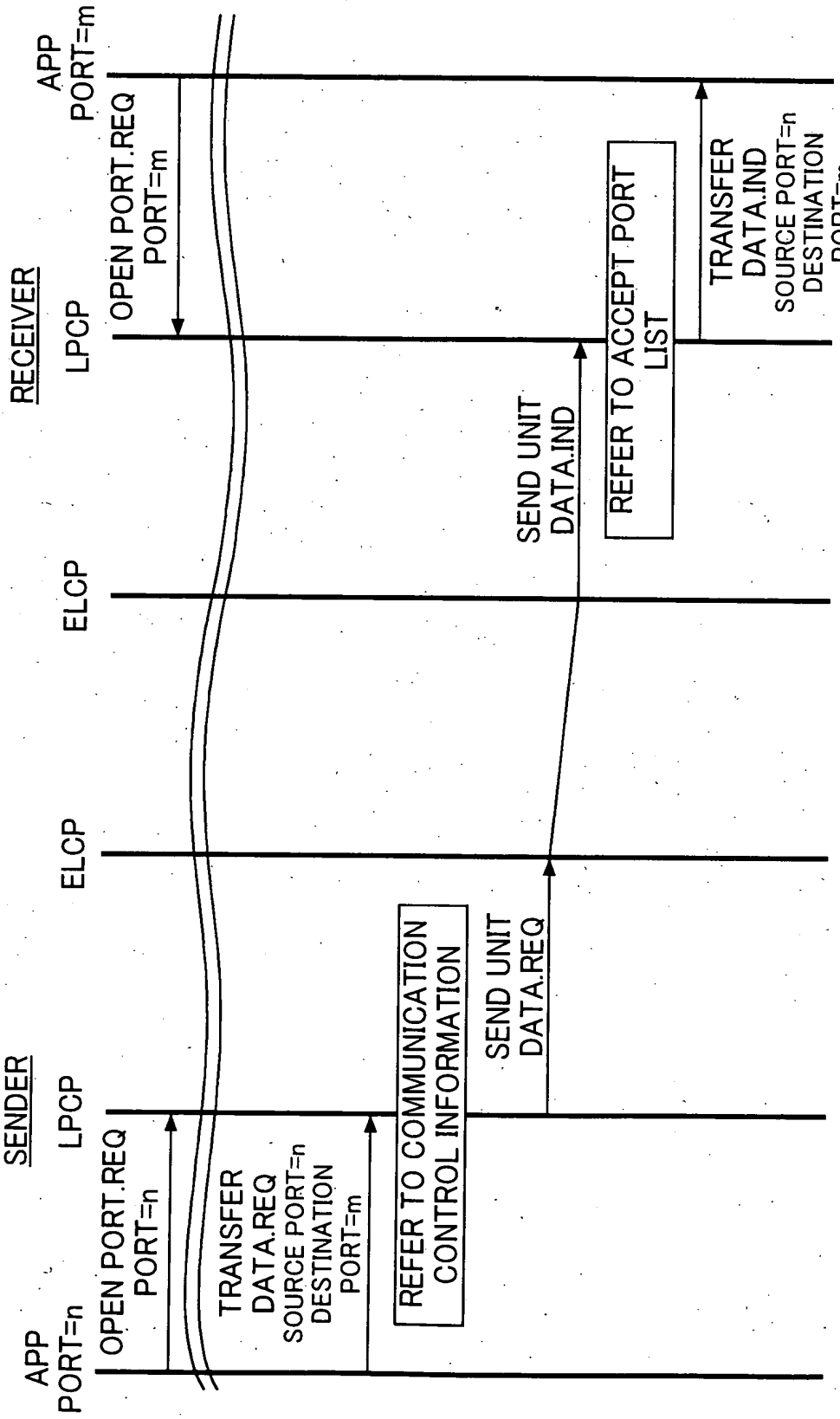

SENDER
RECEIVER
APP PORT=n
LPCP
ELCP
ELCP
LPCP
APP PORT=m
OPEN PORT.REQ PORT=n
TRANSFER DATA.REQ SOURCE PORT=n DESTINATION PORT=m
REFER TO COMMUNICATION CONTROL INFORMATION
SEND UNIT DATA.REQ
SEND UNIT DATA.IND
REFER TO ACCEPT PORT LIST
TRANSFER DATA.IND SOURCE PORT=n DESTINATION PORT=m
OPEN PORT.REQ PORT=m

FIG. 21

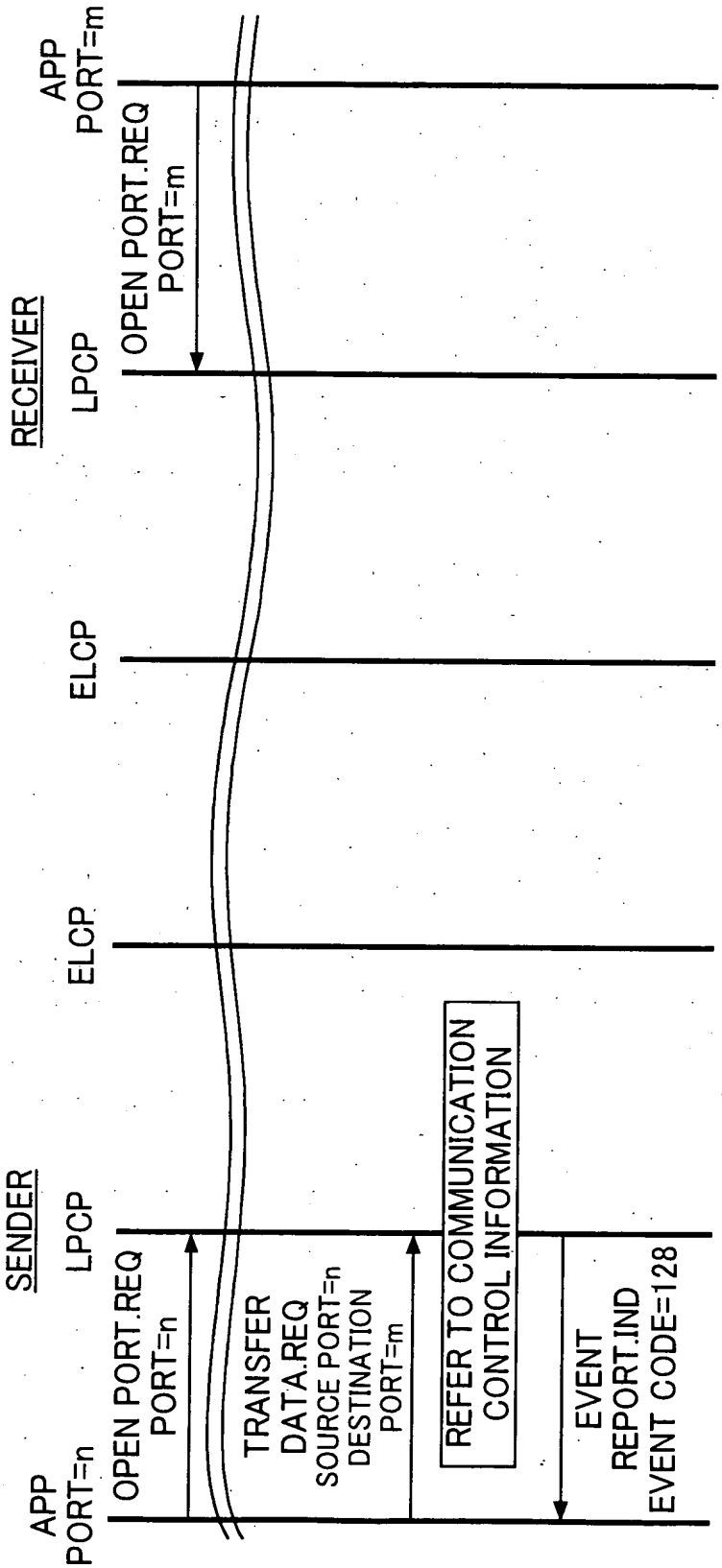

SENDER
RECEIVER
APP
PORT=n
LPCP
ELCP
ELCP
LPCP
APP
PORT=m
OPEN PORT.REQ
PORT=n
TRANSFER
DATA.REQ
SOURCE PORT=n
DESTINATION
PORT=m
REFER TO COMMUNICATION
CONTROL INFORMATION
EVENT
REPORT.IND
EVENT CODE=128
OPEN PORT.REQ
PORT=m

FIG. 22

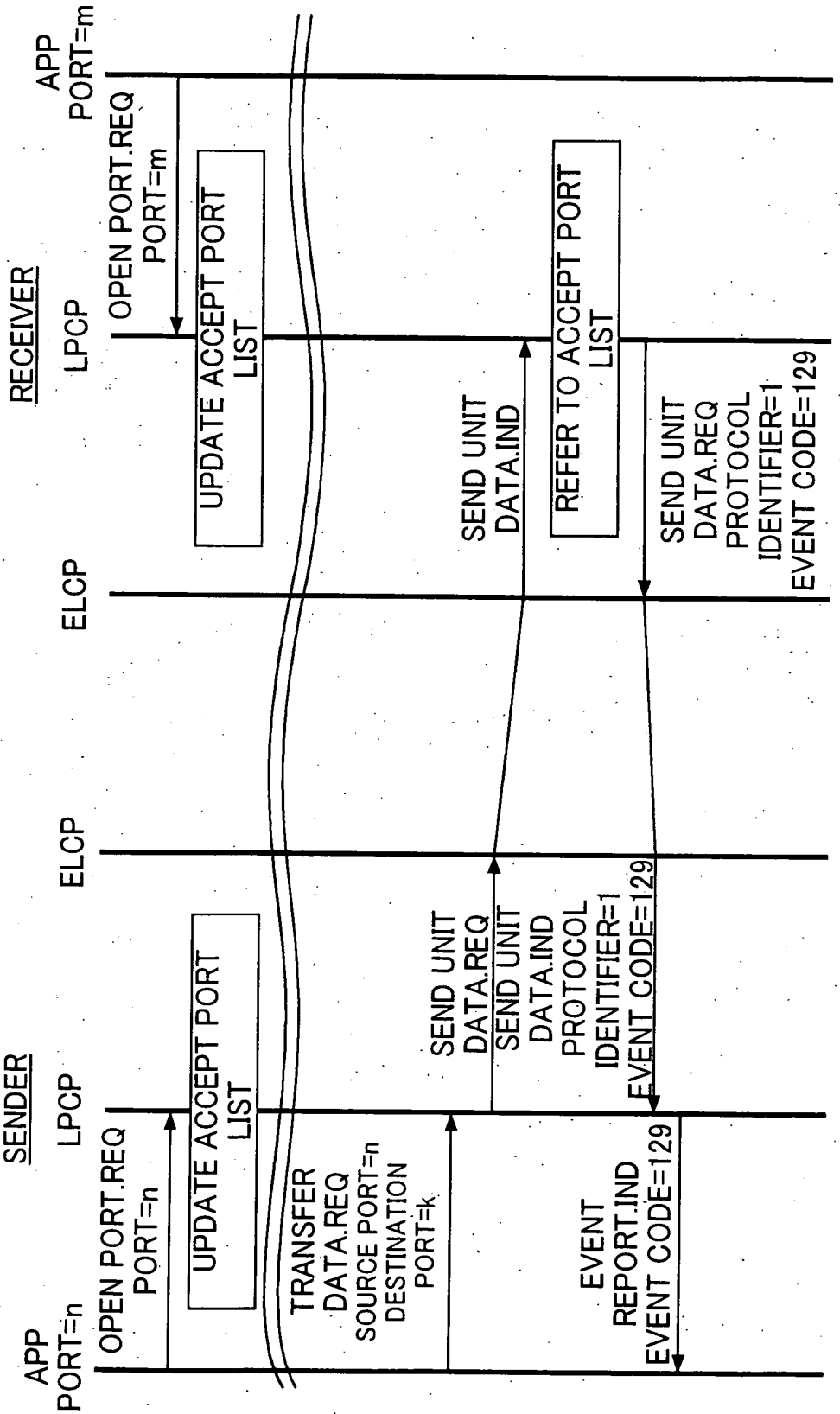

SENDER
RECEIVER
APP
PORT=n
LPCP
ELCP
ELCP
LPCP
APP
PORT=m
OPEN PORT.REQ
PORT=n
UPDATE ACCEPT PORT
LIST
TRANSFER
DATA.REQ
SOURCE PORT=n
DESTINATION
PORT=k
SEND UNIT
DATA.REQ
SEND UNIT
DATA.IND
PROTOCOL
IDENTIFIER=1
EVENT CODE=129
EVENT
REPORT.IND
EVENT CODE=129
OPEN PORT.REQ
PORT=m
UPDATE ACCEPT PORT
LIST
SEND UNIT
DATA.IND
REFER TO ACCEPT PORT
LIST
SEND UNIT
DATA.REQ
PROTOCOL
IDENTIFIER=1
EVENT CODE=129

FIG. 23

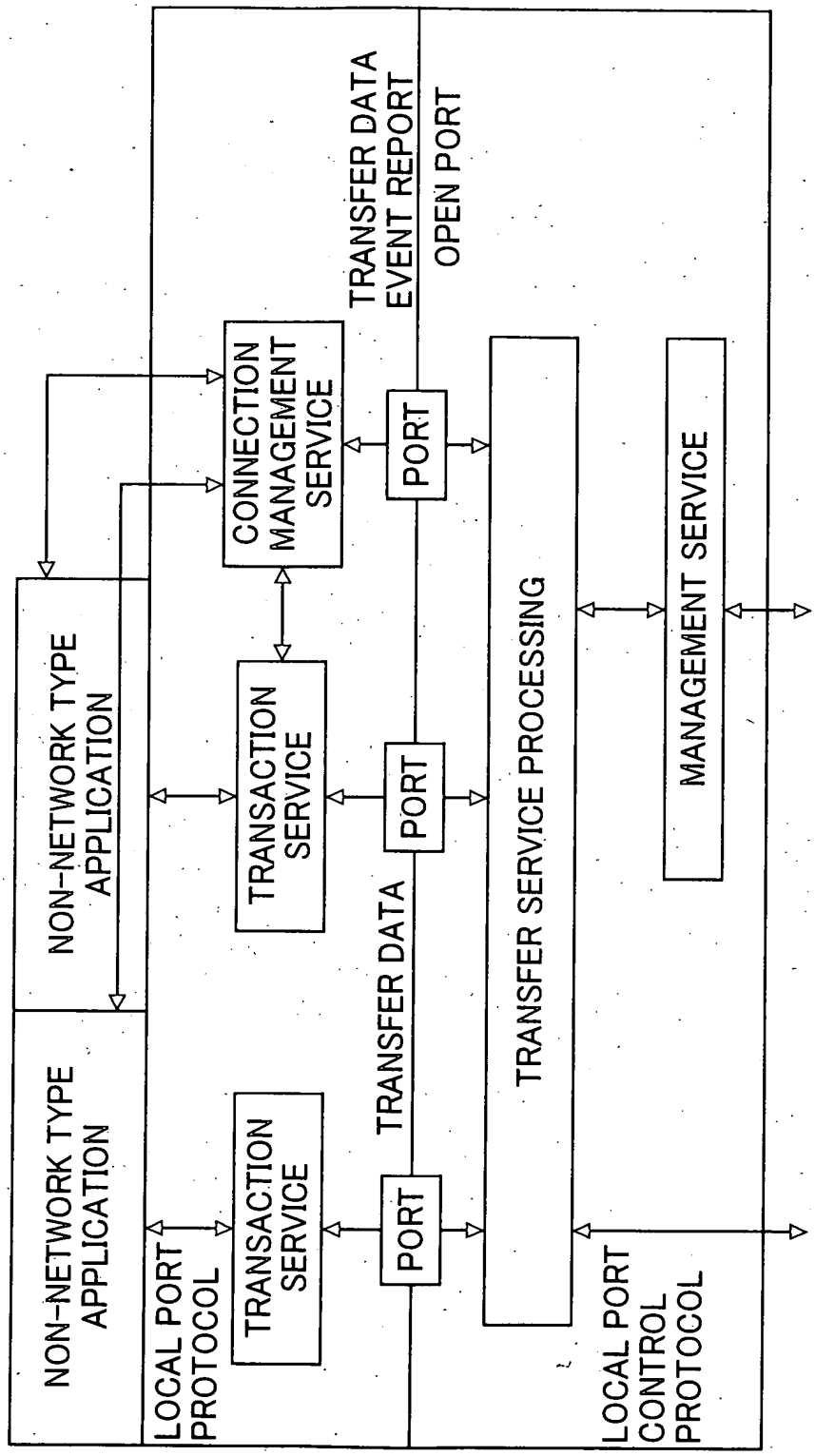

NON-NETWORK TYPE APPLICATION
NON-NETWORK TYPE APPLICATION
CONNECTION MANAGEMENT SERVICE
TRANSACTION SERVICE
TRANSACTION SERVICE
PORT
PORT
PORT
TRANSFER DATA
TRANSFER DATA EVENT REPORT
OPEN PORT
TRANSFER SERVICE PROCESSING
MANAGEMENT SERVICE
LOCAL PORT PROTOCOL
LOCAL PORT CONTROL PROTOCOL

FIG. 24

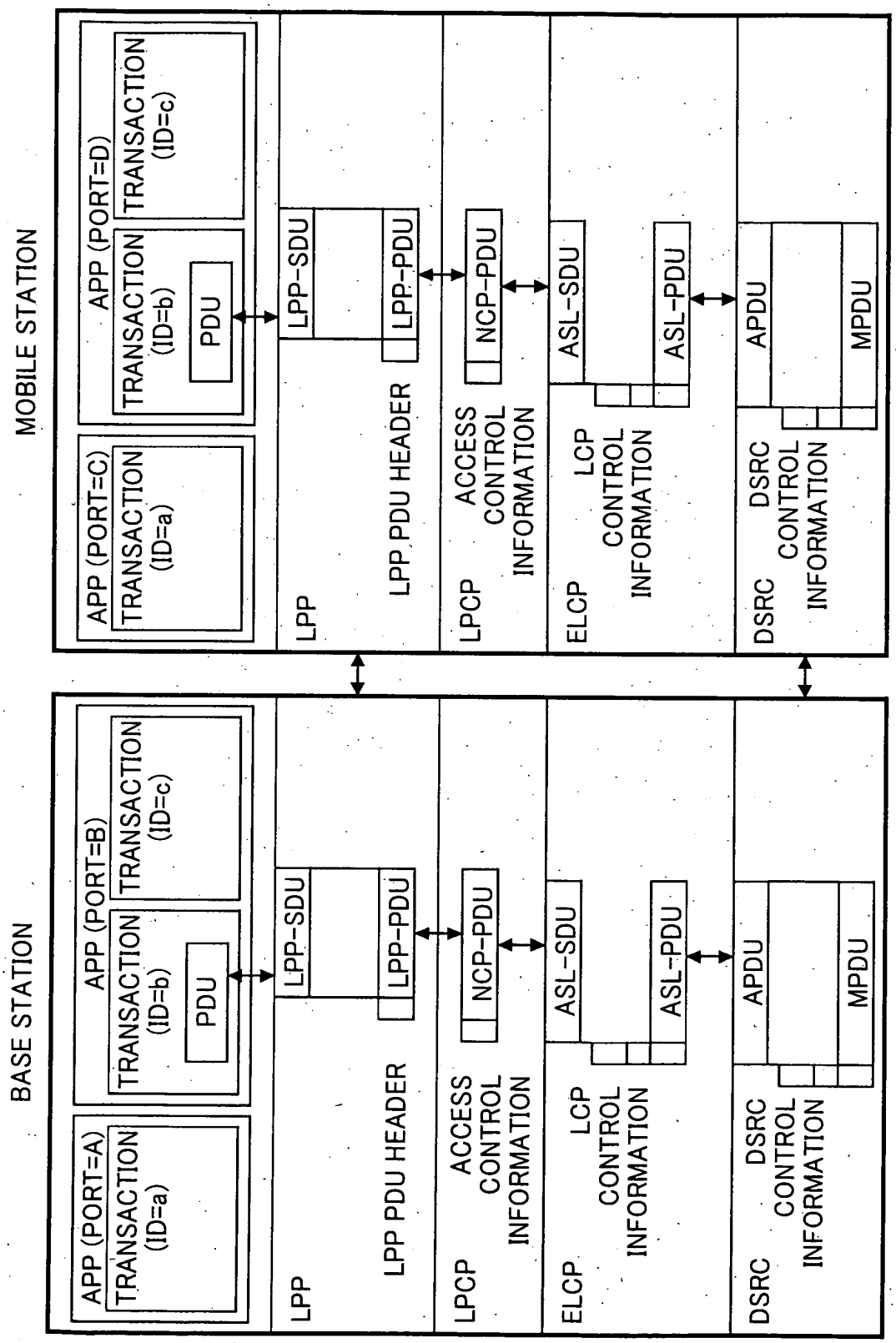

MOBILE STATION
BASE STATION
APP (PORT=A)
TRANSACTION (ID=a)
APP (PORT=B)
TRANSACTION (ID=b)
PDU
TRANSACTION (ID=c)
APP (PORT=C)
TRANSACTION (ID=a)
APP (PORT=D)
TRANSACTION (ID=b)
PDU
TRANSACTION (ID=c)
LPP
LPP-SDU
LPP-PDU
LPP PDU HEADER
LPCP
ACCESS CONTROL INFORMATION
NCP-PDU
ELCP
LCP CONTROL INFORMATION
ASL-SDU
ASL-PDU
DSRC
DSRC CONTROL INFORMATION
APDU
MPDU

FIG. 25

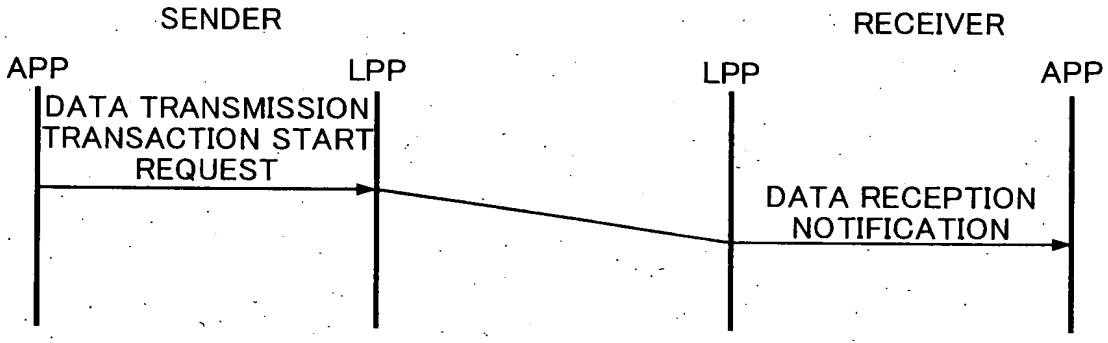


FIG. 26

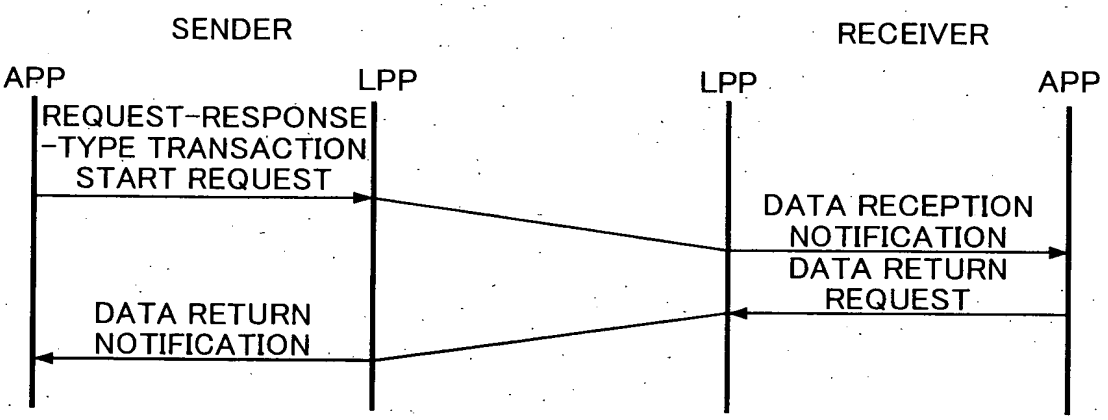


FIG. 27

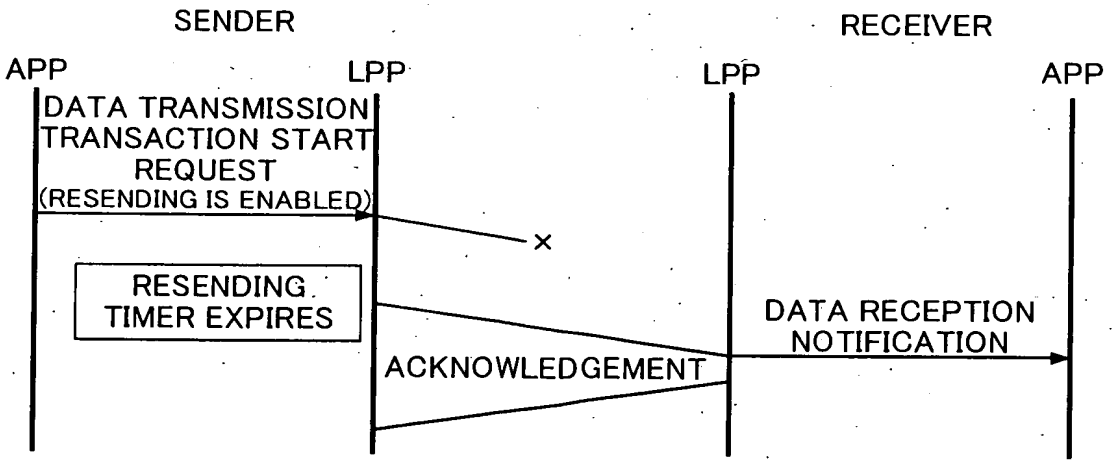


FIG. 28

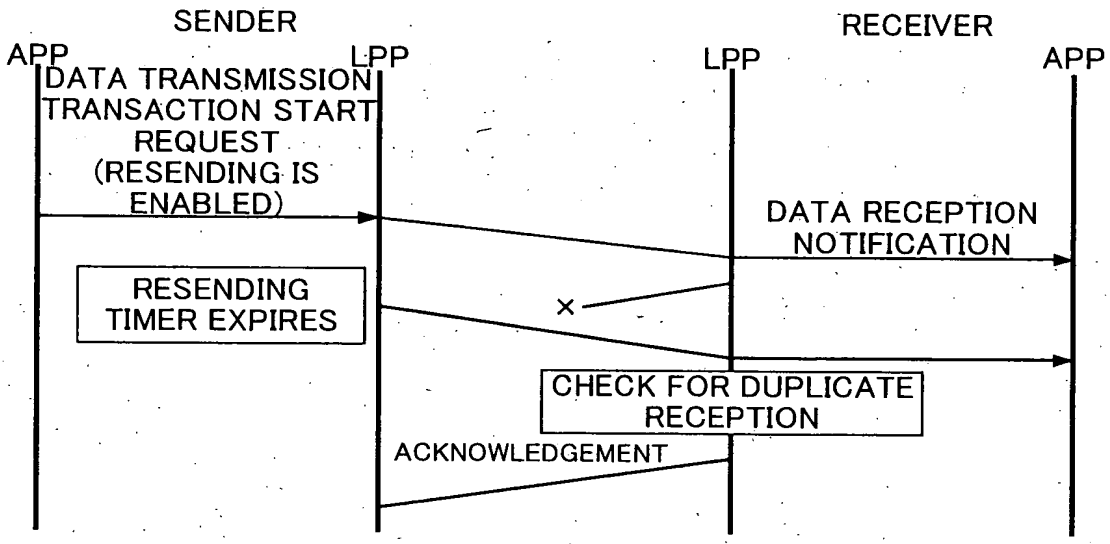

SENDER
RECEIVER
APP
LPP
LPP
APP
DATA TRANSMISSION TRANSACTION START REQUEST (RESENDING IS ENABLED)
DATA RECEPTION NOTIFICATION
RESENDING TIMER EXPIRES
CHECK FOR DUPLICATE RECEPTION
ACKNOWLEDGEMENT

FIG. 29

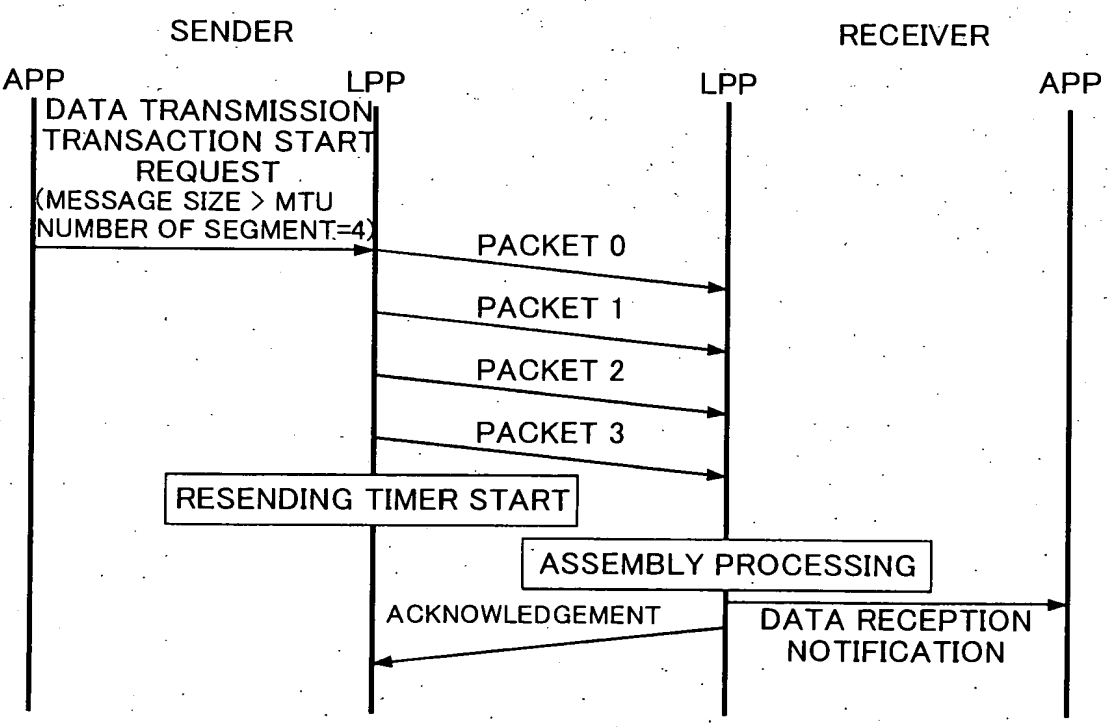

SENDER
RECEIVER
APP
LPP
LPP
APP
DATA TRANSMISSION TRANSACTION START REQUEST (MESSAGE SIZE > MTU NUMBER OF SEGMENT=4)
PACKET 0
PACKET 1
PACKET 2
PACKET 3
RESENDING TIMER START
ASSEMBLY PROCESSING
ACKNOWLEDGEMENT
DATA RECEPTION NOTIFICATION

FIG. 30

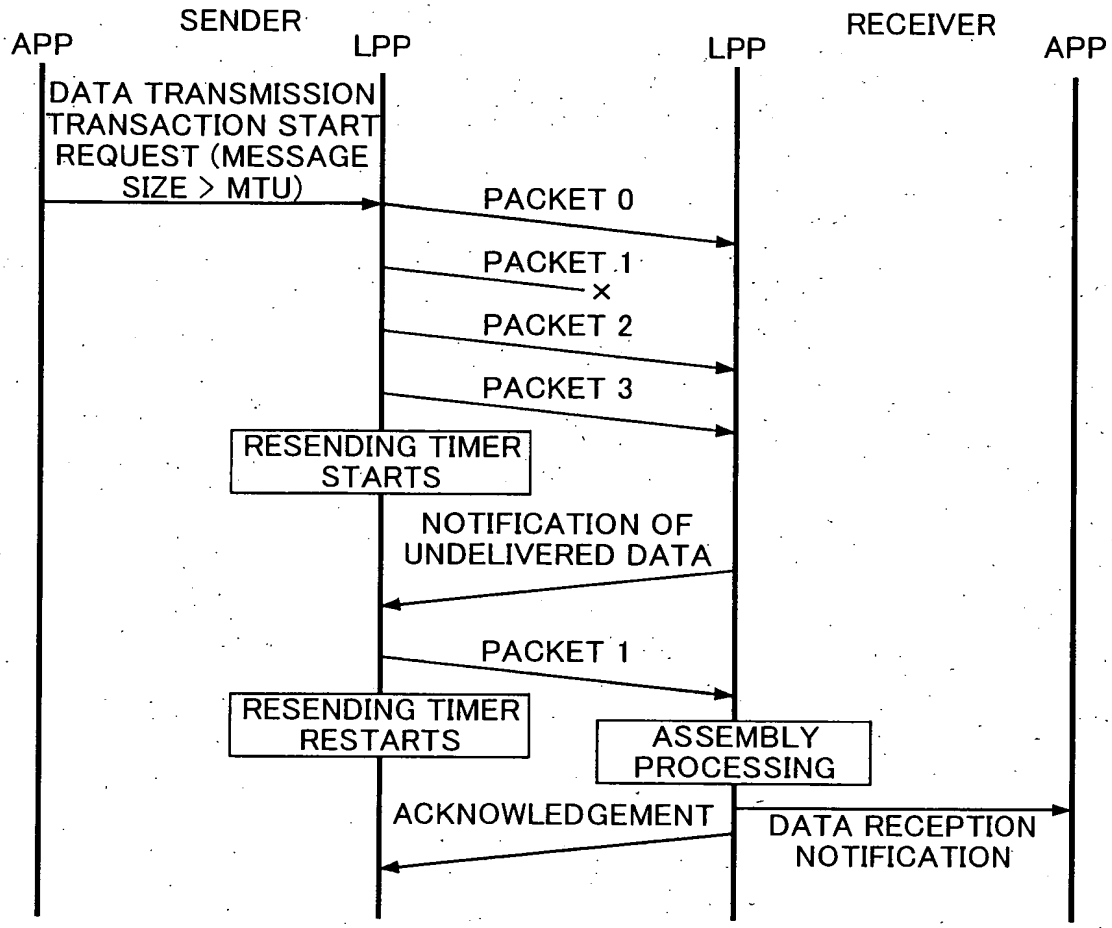

SENDER
RECEIVER
APP
LPP
LPP
APP
DATA TRANSMISSION TRANSACTION START REQUEST (MESSAGE SIZE > MTU)
PACKET 0
PACKET 1
PACKET 2
PACKET 3
RESENDING TIMER STARTS
NOTIFICATION OF UNDELIVERED DATA
PACKET 1
RESENDING TIMER RESTARTS
ASSEMBLY PROCESSING
ACKNOWLEDGEMENT
DATA RECEPTION NOTIFICATION

FIG. 31

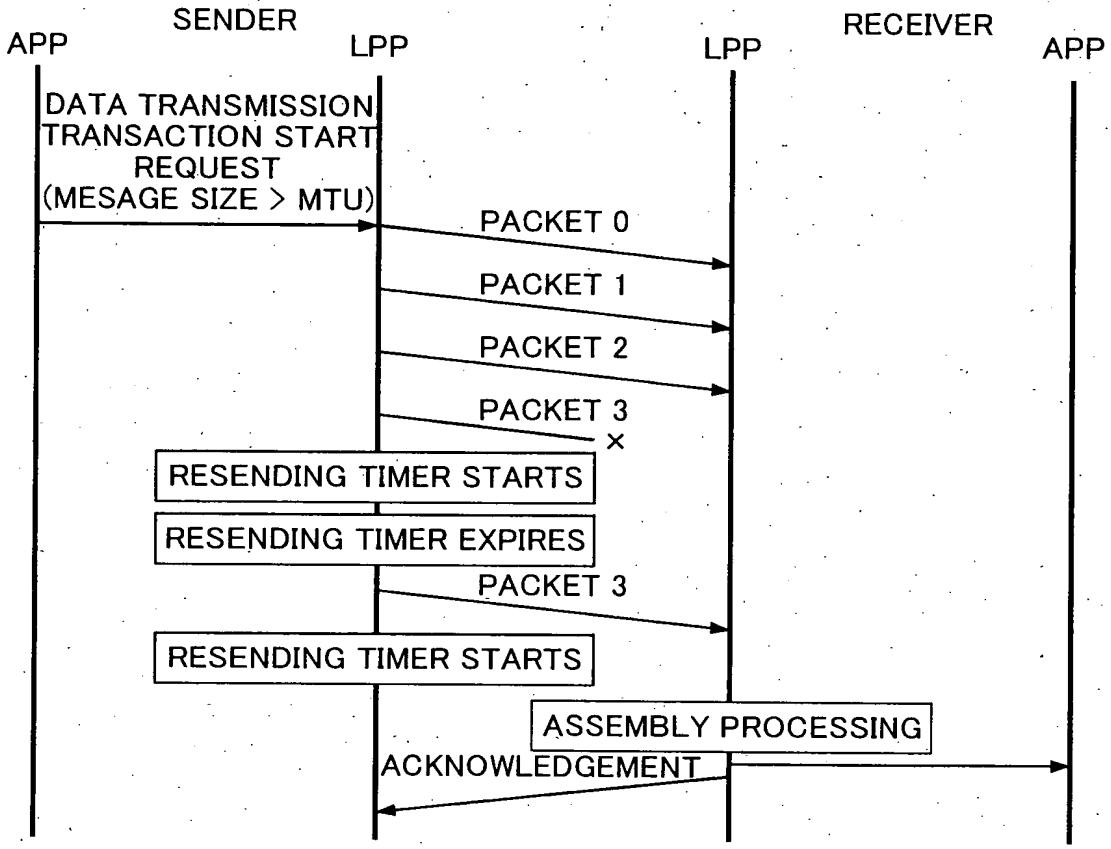

SENDER
RECEIVER
APP
LPP
LPP
APP
DATA TRANSMISSION TRANSACTION START REQUEST (MESAGE SIZE > MTU)
PACKET 0
PACKET 1
PACKET 2
PACKET 3
×
RESENDING TIMER STARTS
RESENDING TIMER EXPIRES
PACKET 3
RESENDING TIMER STARTS
ASSEMBLY PROCESSING
ACKNOWLEDGEMENT

FIG. 32

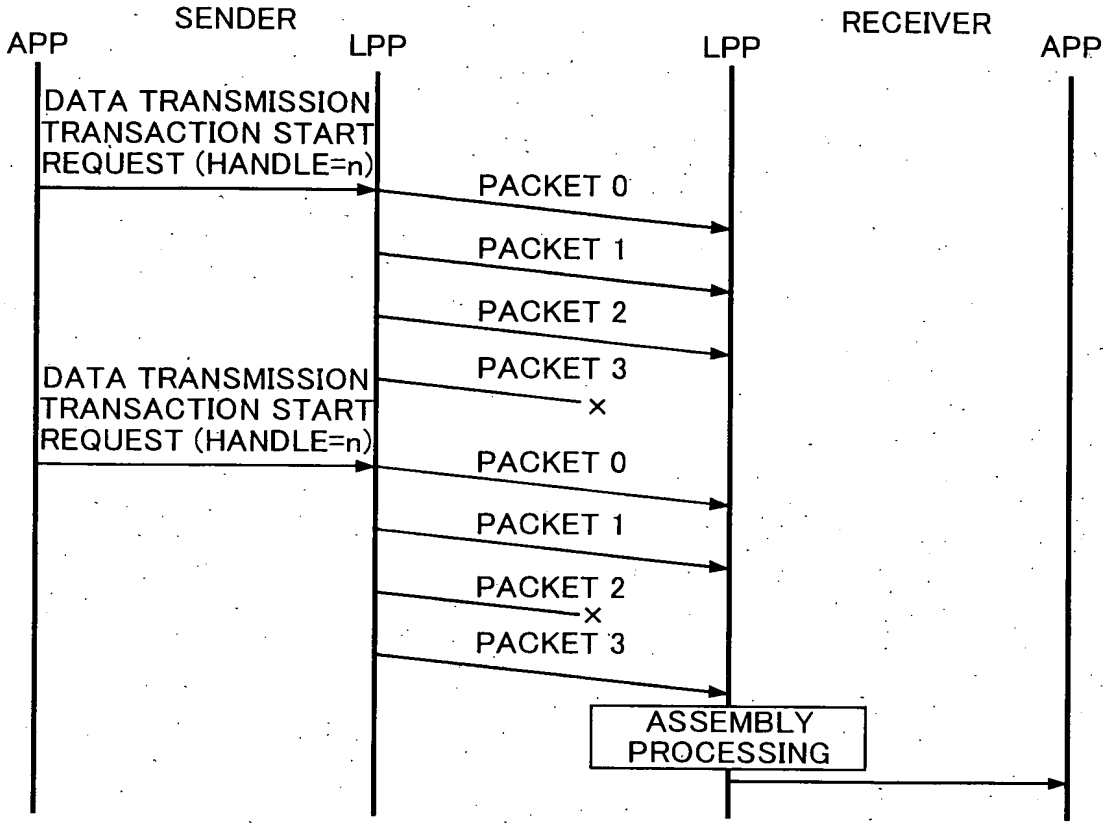

SENDER
RECEIVER
APP
LPP
LPP
APP
DATA TRANSMISSION TRANSACTION START REQUEST (HANDLE=n)
PACKET 0
PACKET 1
PACKET 2
PACKET 3
DATA TRANSMISSION TRANSACTION START REQUEST (HANDLE=n)
PACKET 0
PACKET 1
PACKET 2
PACKET 3
ASSEMBLY PROCESSING

FIG. 33

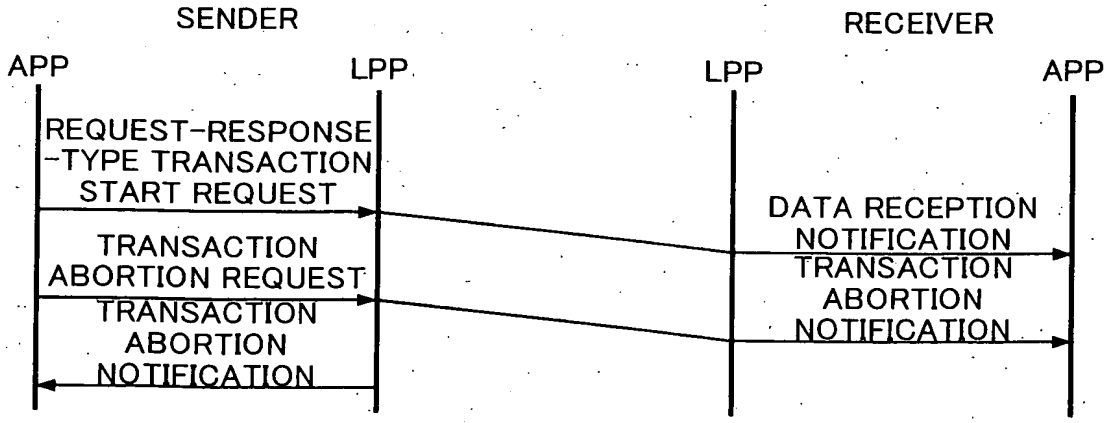

SENDER
RECEIVER
APP
LPP
LPP
APP
REQUEST-RESPONSE -TYPE TRANSACTION START REQUEST
DATA RECEPTION NOTIFICATION
TRANSACTION ABORTION REQUEST
TRANSACTION ABORTION NOTIFICATION
TRANSACTION ABORTION NOTIFICATION

FIG. 34

PRIMITIVE TYPE	ABBREVIATION	DESCRIPTION FOR PRIMITIVE
REQUEST	REQ	USED WHEN AN UPPER LAYER REQUESTS A SERVICE FROM A LOWER LAYER.
INDICATION	IND	USED WHEN A LOWER LAYER NOTIFIERS AN UPPER LAYER OF A SERVICE FROM THE COUNTERPART.
RESPONSE	RES	USED WHEN AN UPPER LAYER GIVES A RESPONSE TO A LOWER LAYER FOR A SERVICE TO THE COUNTERPART.
CONFIRM	CNF	USED WHEN A LOWER LAYER NOTIFIES AN UPPER LAYER THAT THE REQUESTED SERVICE IS COMPLETED.

FIG. 35

SYMBOL	DESCRIPTION
M (MANDATORY)	MANDATORY PARAMETER
C (CONDITIONAL)	PARAMETER SPECIFIED WHEN SPECIFIED IN THE IMMEDIATELY PRECEDING PRIMITIVE ("REQ" IN THE CASE OF "IND", AND "RES" IN THE CASE OF "CNF")
O (OPTIONAL)	OPTIONAL PARAMETER
(=)	INDICATES THAT THE PARAMETER VALUE IS EQUIVALENT TO THE VALUE OF THE IMMEDIATELY PRECEDING PRIMITIVE ("REQ" IN THE CASE OF "IND", AND "RES" IN THE CASE OF "CNF").

FIG. 36

PRIMITIVE / PARAMETER	INVOKE			
	REQ	IND	RES	CNF
LINK ADDRESS	M	M(=)	–	–
SOURCE PORT	M	M(=)	–	–
DESTINATION PORT	M	M(=)	–	–
USER DATA SIZE	M	M(=)	M	M(=)
USER DATA	O	C(=)	O	C(=)
TRANSACTION TYPE	M	M(=)	–	–
REQUIRE ACK	O	–	O	–
RESULT TIMEOUT	O	–	–	–
HANDLE	M	M	M	M

FIG. 37

PRIMITIVE / PARAMETER	ABORT	
	REQ	IND
ABORT TYPE	O	C(=)
ABORT CODE	O	C(=)
HANDLE	M	M

FIG. 38

ABORT CODE	CODE	DESCRIPTION
UNKNOWN	0x00	-
PROTOCOL ERROR	0x01	THE RECEIVED PDU STRUCTURE IS ABNORMAL.
TID IS INVALID.	0x02	THE TID IS INVALID.
TRANSACTION SERVICE IS NOT SUPPORTED.	0x03	THE RECEIVER DOES NOT SUPPORT THE REQUEST-RESPONSE TYPE TRANSACTION SERVICE.
LPP VERSION IS DIFFERENT.	0x04	THE LPP VERSION IS DIFFERENT BETWEEN THE SENDER AND THE RECEIVER.
RECEIVE BUFFER OVERFLOW	0x05	THE RECEIVE BUFFER HAS OVERFLOWED.
MTU ERROR	0x06	BECAUSE THE SEND DATA EXCEEDED THE MTU IN THE LPCP, THE TRANSACTION COULD NOT BE STARTED (WHEN SEGMENTATION/RE-ASSEMBLY PROCESSING IS NOT SUPPORTED).
RESEND TIMER TIMEOUT	0x07	THE RESEND TIMER EXPIRED, AND THE TRANSACTION WAS ABORTED.
RESULT TIMER TIMEOUT	0x08	THE RESULT TIMER EXPIRED, AND THE TRANSACTION WAS ABORTED.
LINK ADDRESS ERROR	0x09	(POINT TO POINT) THE VEHICLE IS NOT PRESENT INSIDE THE ZONE. (BROADCAST) THE BROADCAST ADDRESS IS ILLEGAL.
DESTINATION PORT ERROR	0x0A	THE DESTINATION PORT NUMBER IS NOT PRESENT IN THE COUNTERPART.
LPP IS NOT SUPPORTED.	0x0B	THE DSRC-ASL DOES NOT SUPPORT THIS PROTOCOL.
ABORTED BY DSRC-ASL.	0x0C	BECAUSE THERE WAS NO SPACE IN THE SEND QUEUE IN THE DSRC-ASL, THE REQUESTED SERVICE WAS ABORTED.
TRANSACTION WAS NOT STARTED.	0x0D	BECAUSE THE NUMBER OF TRANSACTIONS EXCEEDED THE NUMBER WHICH CAN BE EXECUTED AT THE SAME TIME, THE TRANSACTION COULD NOT BE STARTED.
UNDER SEGMENTATION/ ASSEMBLY PROCESSING	0x0E	A TRANSACTION USED SEGMENTATION/RE-ASSEMBLY PROCESSING IS BEING EXECUTED.
RESERVED	0x0F TO 0xFF	RESERVED

FIG. 39

PRIMITIVE / PARAMETER	CONNECT			
	REQ	IND	RES	CNF
QUERIST PORT	M			–
QUERY LID	O			–
QUERY PORT	O			–
TIMEOUT	O			–
CONNECTED LID	–			M
ACCEPT PORT	–			M

FIG. 40

PRIMITIVE / PARAMETER	DISCONNECT	
	REQ	IND
LINK ADDRESS	–	M

FIG. 41

PRIMITIVE / PARAMETER	ABORT
	REQ
PORT NO	M
BULK AREA	O
BULK AREA SIZE	O

FIG. 42

PRIMITIVE / PARAMETER	ABORT
	REQ
PORT NO	M

FIG. 43

PDU TYPE	USAGE SCENARIO
INVOKE	USED IN THE PRIMITIVE "INVOKE.REQ".
RESULT	USED IN THE PRIMITIVE "INVOKE.RES".
ACKNOWLEDGEMENT	USED IN ARRIVAL ACKNOWLEDGEMENT.
ABORT	USED WHEN A TRANSACTION IS ABORTED (DUE TO THE PRIMITIVE "ABORT" OR SYSTEM ERROR).
INVOKE SEGMENT	USED WHEN THE MESSAGE SIZE EXCEEDS THE MTU IN THE LPCP IN THE PRIMITIVE "INVOKE.REQ".
RESULT SEGMENT	USED WHEN THE MESSAGE SIZE EXCEEDS THE MTU IN THE LPCP IN THE PRIMITIVE "INVOKE.RES".
NACK	USED IN SELECTIVE RESEND PROCESSING FOR SEGMENTATION/ASSEMBLY PROCESSING.

FIG. 44

HEADER PORTION	DATA PORTION

FIG. 45

BIT/OCTET	0	1	2	3	4	5	6	7
1	PDU TYPE=INVOKE (0x01)			VERSION		TT	RA	RD
2	TID							
3								

FIG. 46

BIT/OCTET	0	1	2	3	4	5	6	7
1	PDU TYPE=RESULT (0x02)			RES	RES	RES	RA	RD
2	TID							
3								

FIG. 47

BIT/OCTET	0	1	2	3	4	5	6	7
1	PDU TYPE=ACK (0x03)			RES	RES	RES	RES	RD
2	TID							
3								

FIG. 48

BIT/OCTET	0	1	2	3	4	5	6	7
1	PDU TYPE=ABORT (0x04)			RES	RES	RES	RES	AT
2	TID							
3								
4	ABORT CODE							

FIG. 49

BIT/OCTET	0	1	2	3	4	5	6	7
1	PDU TYPE=INVOKE SGM (0x05)			VERSION		TT	FIN	RD
2	TID							
3								
4	SEGMENT NO							
5								

FIG. 50

BIT/OCTET	0	1	2	3	4	5	6	7
1	PDU TYPE=RESULT SGM (0x06)			RES	RES	RES	FIN	RD
2	TID							
3								
4	SEGMENT NO							
5								

FIG. 51

BIT/OCTET	0	1	2	3	4	5	6	7
1	PDU TYPE=NACK (0x07)			RES	RES	RES	RES	RD
2	TID							
3								
4	NUM SEG=n							
5								
6 . . 6+nx2	SEGMENT NUMBER LIST							

FIG. 52

BIT/OCTET	0	1	2	3	4	5	6	7
1	STATUS=ACCEPT PORT (1)							
2	NUM PORTS=n							
3								
4 . . 4+nx2	ACCEPT PORT LIST							

FIG. 53

BIT/OCTET	0	1	2	3	4	5	6	7
1	STATUS=REJECT PORT (2)							
2	REJECT PORT							

FIG. 54

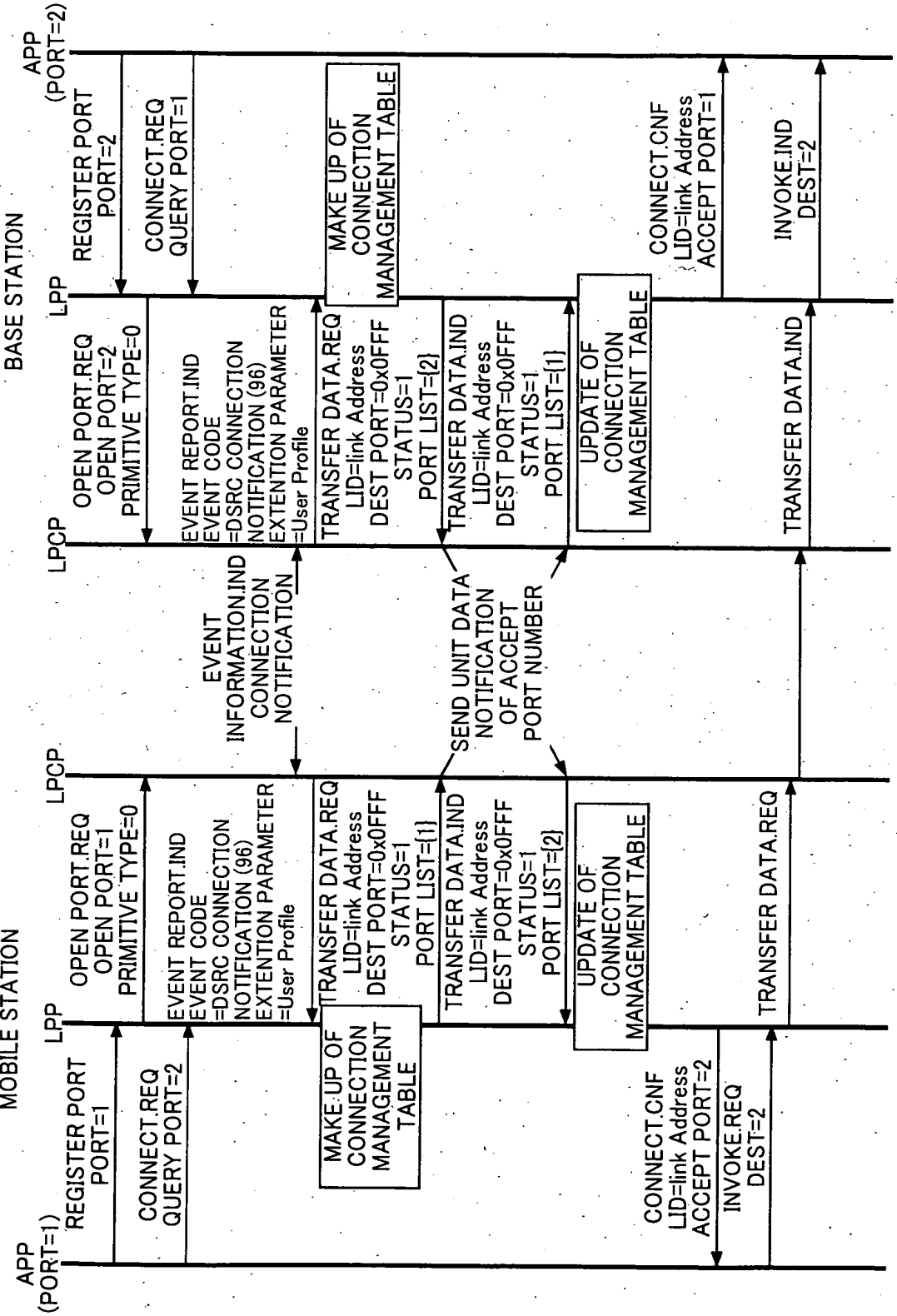

BASE STATION
MOBILE STATION
APP (PORT=2)
APP (PORT=1)
LPP
LPCP
REGISTER PORT PORT=2
CONNECT.REQ QUERY PORT=1
MAKE UP OF CONNECTION MANAGEMENT TABLE
CONNECT.CNF LID=link Address ACCEPT PORT=1
INVOKE.IND DEST=2
OPEN PORT.REQ OPEN PORT=2 PRIMITIVE TYPE=0
EVENT REPORT.IND EVENT CODE =DSRC CONNECTION NOTIFICATION (96) EXTENTION PARAMETER =User Profile
TRANSFER DATA.REQ LID=link Address DEST PORT=0x0FFF STATUS=1 PORT LIST={2}
TRANSFER DATA.IND LID=link Address DEST PORT=0x0FFF STATUS=1 PORT LIST={1}
UPDATE OF CONNECTION MANAGEMENT TABLE
TRANSFER DATA.IND
EVENT INFORMATION.IND CONNECTION NOTIFICATION
SEND UNIT DATA NOTIFICATION OF ACCEPT PORT NUMBER
OPEN PORT.REQ OPEN PORT=1 PRIMITIVE TYPE=0
EVENT REPORT.IND EVENT CODE =DSRC CONNECTION NOTIFICATION (96) EXTENTION PARAMETER =User Profile
TRANSFER DATA.REQ LID=link Address DEST PORT=0x0FFF STATUS=1 PORT LIST={1}
TRANSFER DATA.IND LID=link Address DEST PORT=0x0FFF STATUS=1 PORT LIST={2}
UPDATE OF CONNECTION MANAGEMENT TABLE
TRANSFER DATA.REQ
REGISTER PORT PORT=1
CONNECT.REQ QUERY PORT=2
MAKE UP OF CONNECTION MANAGEMENT TABLE
CONNECT.CNF LID=link Address ACCEPT PORT=2
INVOKE.REQ DEST=2

FIG. 55

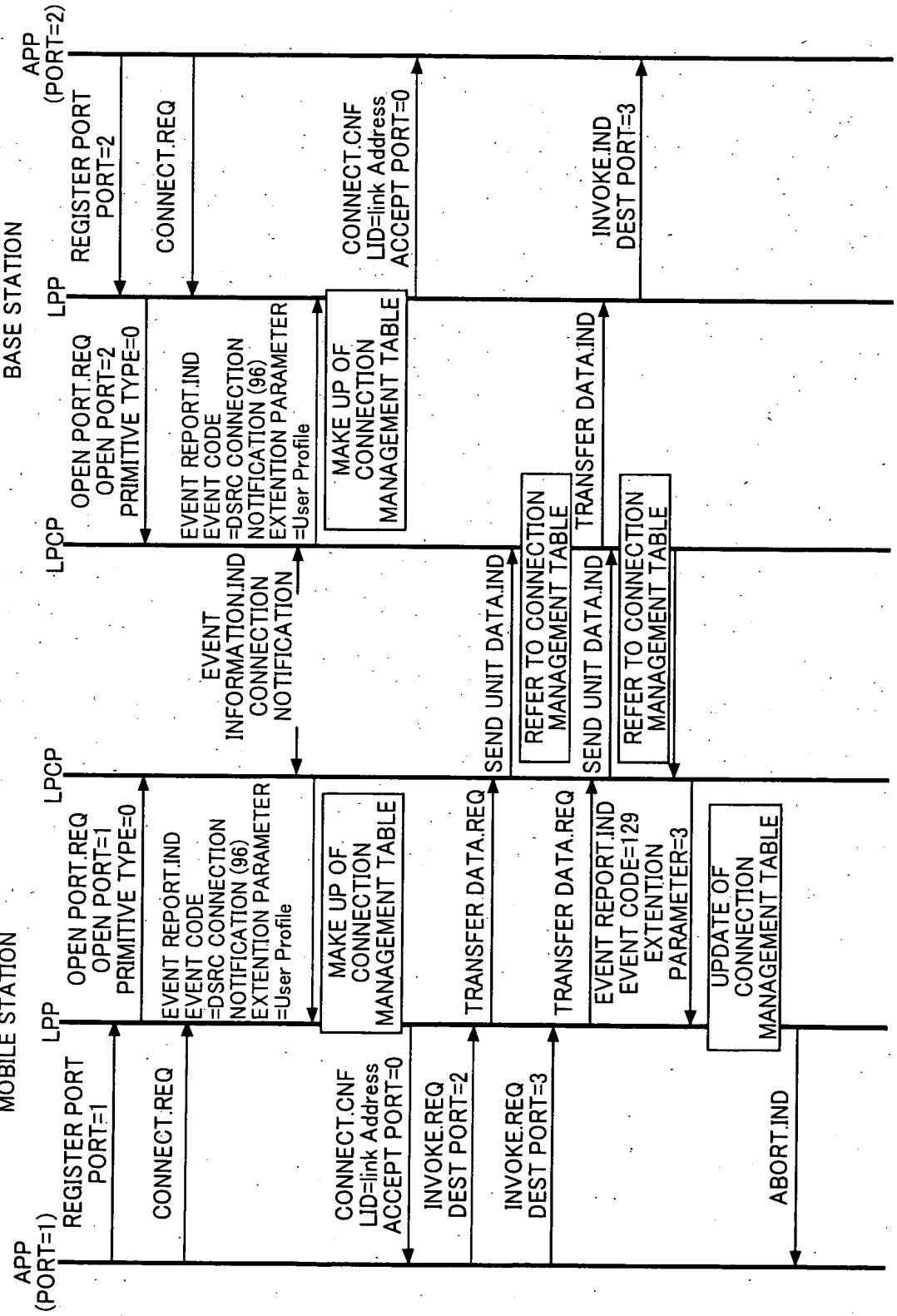

MOBILE STATION
BASE STATION
APP (PORT=1)
LPP
LPCP
APP (PORT=2)
REGISTER PORT PORT=1
CONNECT.REQ
OPEN PORT.REQ OPEN PORT=1 PRIMITIVE TYPE=0
EVENT REPORT.IND EVENT CODE =DSRC CONNECTION NOTIFICATION (96) EXTENTION PARAMETER =User Profile
MAKE UP OF CONNECTION MANAGEMENT TABLE
CONNECT.CNF LID=link Address ACCEPT PORT=0
INVOKE.REQ DEST PORT=2
INVOKE.REQ DEST PORT=3
TRANSFER DATA.REQ
EVENT REPORT.IND EVENT CODE=129 EXTENTION PARAMETER=3
UPDATE OF CONNECTION MANAGEMENT TABLE
ABORT.IND
REGISTER PORT PORT=2
CONNECT.REQ
OPEN PORT.REQ OPEN PORT=2 PRIMITIVE TYPE=0
EVENT REPORT.IND EVENT CODE =DSRC CONNECTION NOTIFICATION (96) EXTENTION PARAMETER =User Profile
MAKE UP OF CONNECTION MANAGEMENT TABLE
CONNECT.CNF LID=link Address ACCEPT PORT=0
INVOKE.IND DEST PORT=3
EVENT INFORMATION.IND CONNECTION NOTIFICATION
SEND UNIT DATA.IND
REFER TO CONNECTION MANAGEMENT TABLE
TRANSFER DATA.IND
SEND UNIT DATA.IND
REFER TO CONNECTION MANAGEMENT TABLE

FIG. 56

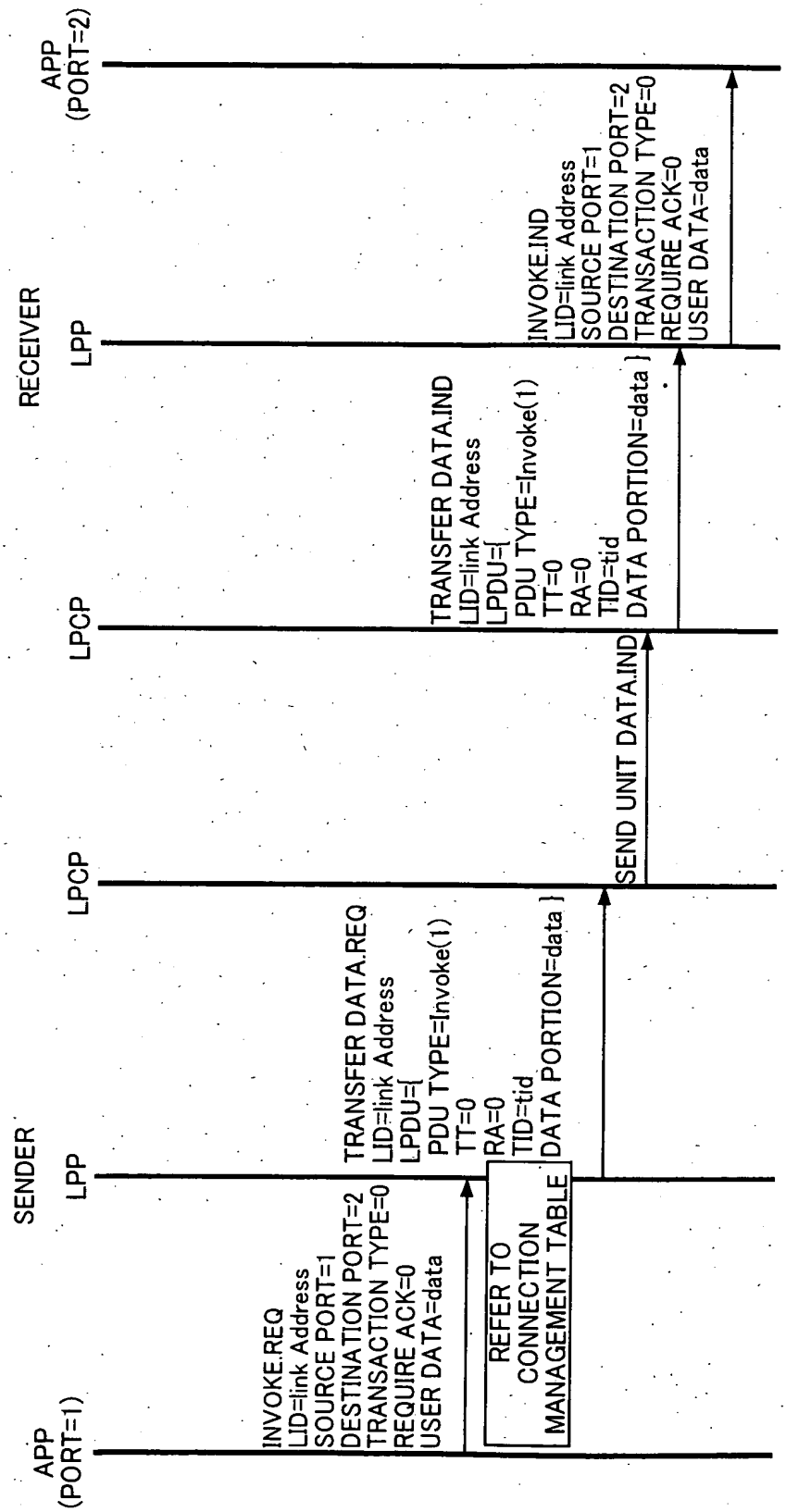

SENDER
RECEIVER
APP (PORT=1)
LPP
LPCP
LPCP
LPP
APP (PORT=2)
INVOKE.REQ
LID=link Address
SOURCE PORT=1
DESTINATION PORT=2
TRANSACTION TYPE=0
REQUIRE ACK=0
USER DATA=data
REFER TO CONNECTION MANAGEMENT TABLE
TRANSFER DATA.REQ
LID=link Address
LPDU={
PDU TYPE=Invoke(1)
TT=0
RA=0
TID=tid
DATA PORTION=data }
SEND UNIT DATA.IND
TRANSFER DATA.IND
LID=link Address
LPDU={
PDU TYPE=Invoke(1)
TT=0
RA=0
TID=tid
DATA PORTION=data }
INVOKE.IND
LID=link Address
SOURCE PORT=1
DESTINATION PORT=2
TRANSACTION TYPE=0
REQUIRE ACK=0
USER DATA=data

FIG. 57

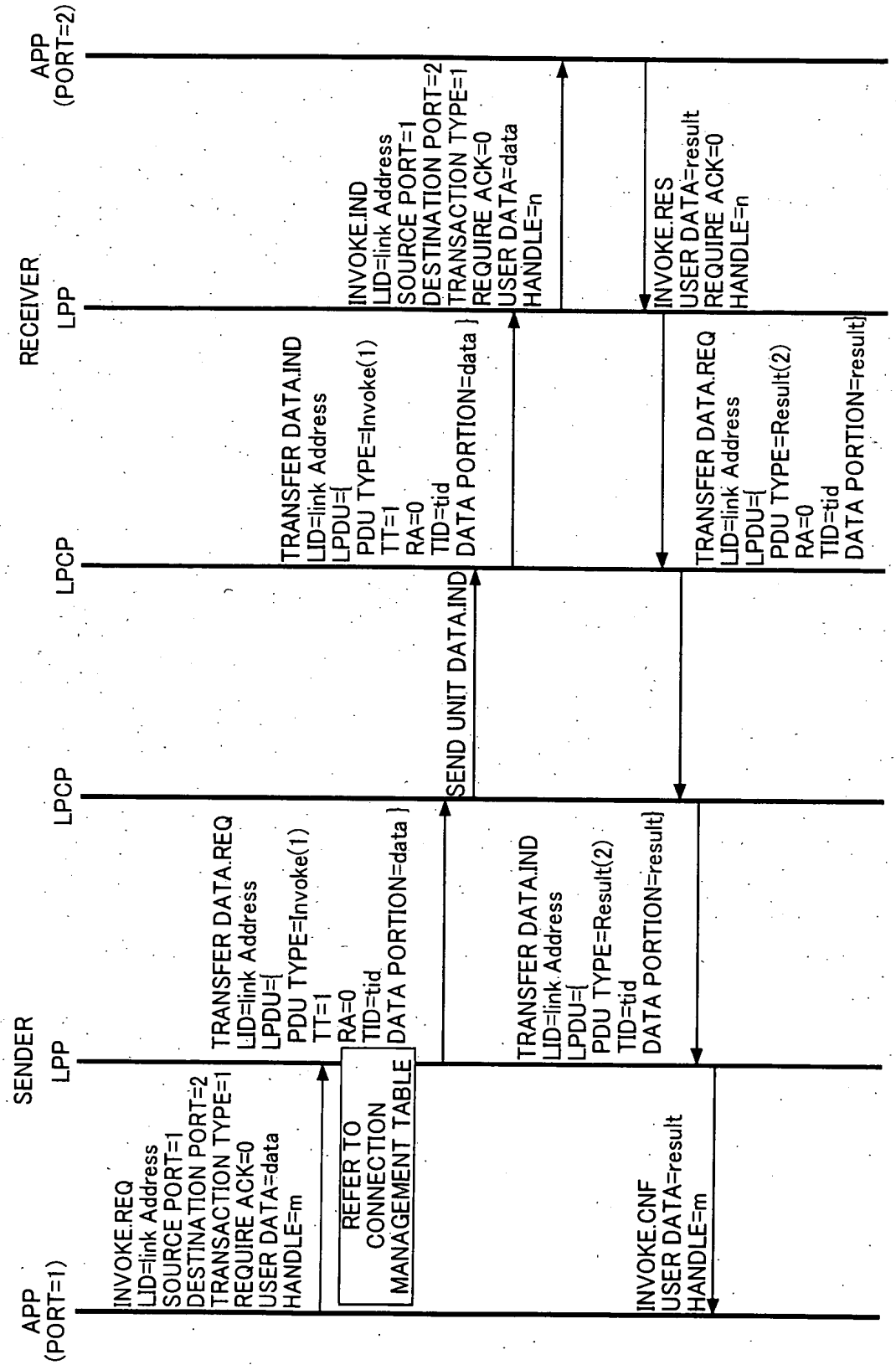

SENDER
RECEIVER
APP (PORT=1)
LPP
LPCP
LPCP
LPP
APP (PORT=2)
INVOKE.REQ
LID=link Address
SOURCE PORT=1
DESTINATION PORT=2
TRANSACTION TYPE=1
REQUIRE ACK=0
USER DATA=data
HANDLE=m
REFER TO CONNECTION MANAGEMENT TABLE
TRANSFER DATA.REQ
LID=link Address
LPDU={
PDU TYPE=Invoke(1)
TT=1
RA=0
TID=tid
DATA PORTION=data }
SEND UNIT DATA.IND
TRANSFER DATA.IND
LID=link Address
LPDU={
PDU TYPE=Invoke(1)
TT=1
RA=0
TID=tid
DATA PORTION=data }
INVOKE.IND
LID=link Address
SOURCE PORT=1
DESTINATION PORT=2
TRANSACTION TYPE=1
REQUIRE ACK=0
USER DATA=data
HANDLE=n
TRANSFER DATA.REQ
LID=link Address
LPDU={
PDU TYPE=Result(2)
TID=tid
DATA PORTION=result}
TRANSFER DATA.IND
LID=link Address
LPDU={
PDU TYPE=Result(2)
TID=tid
DATA PORTION=result}
INVOKE.RES
USER DATA=result
REQUIRE ACK=0
HANDLE=n
INVOKE.CNF
USER DATA=result
HANDLE=m

FIG. 58

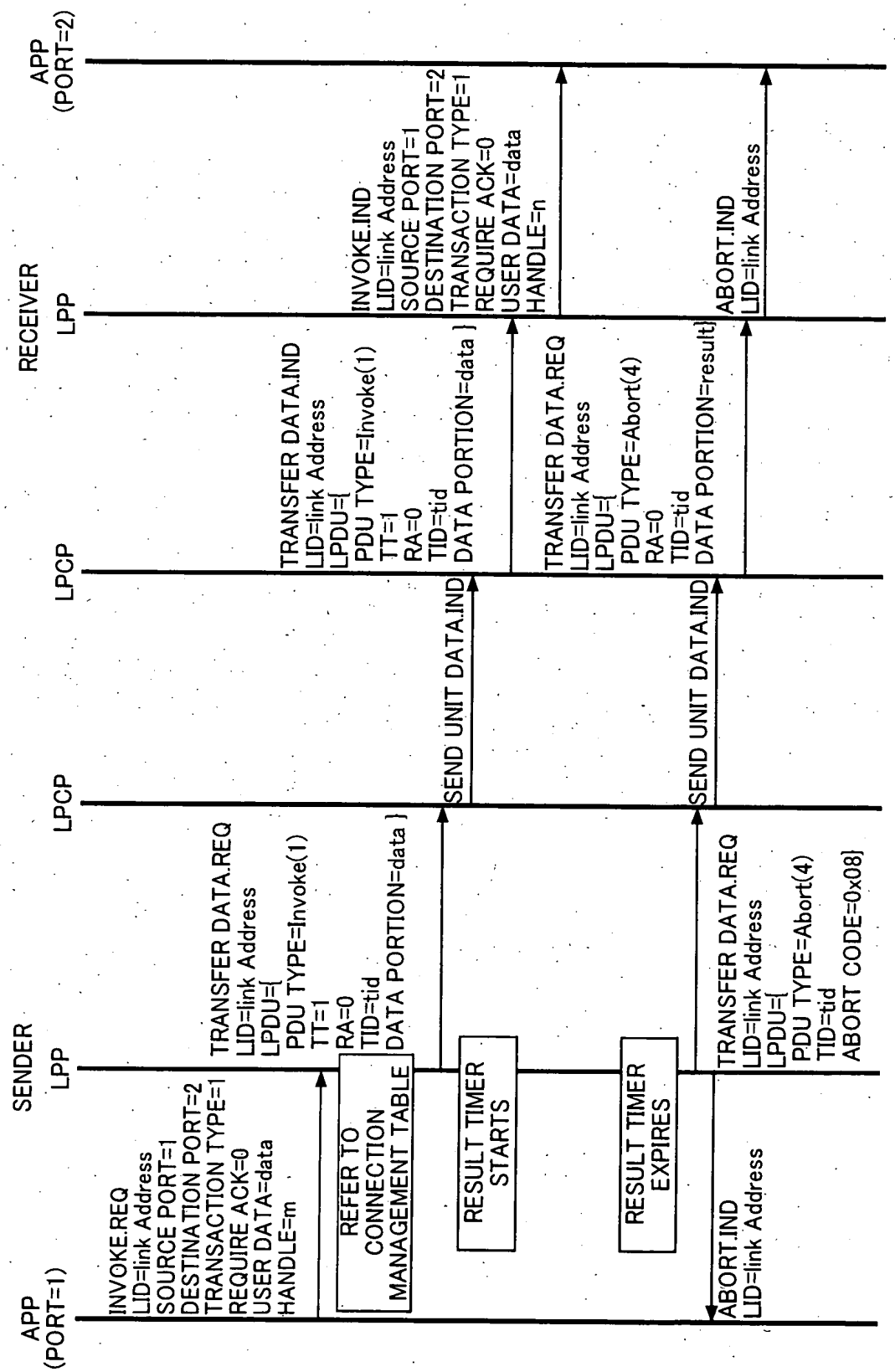

APP (PORT=1)
SENDER
LPP
LPCP
LPCP
RECEIVER
LPP
APP (PORT=2)
INVOKE.REQ
LID=link Address
SOURCE PORT=1
DESTINATION PORT=2
TRANSACTION TYPE=1
REQUIRE ACK=0
USER DATA=data
HANDLE=m
TRANSFER DATA.REQ
LID=link Address
LPDU={
PDU TYPE=Invoke(1)
TT=1
RA=0
TID=tid
DATA PORTION=data }
REFER TO CONNECTION MANAGEMENT TABLE
SEND UNIT DATA.IND
TRANSFER DATA.IND
LID=link Address
LPDU={
PDU TYPE=Invoke(1)
TT=1
RA=0
TID=tid
DATA PORTION=data }
INVOKE.IND
LID=link Address
SOURCE PORT=1
DESTINATION PORT=2
TRANSACTION TYPE=1
REQUIRE ACK=0
USER DATA=data
HANDLE=n
RESULT TIMER STARTS
RESULT TIMER EXPIRES
TRANSFER DATA.REQ
LID=link Address
LPDU={
PDU TYPE=Abort(4)
TID=tid
ABORT CODE=0x08}
SEND UNIT DATA.IND
TRANSFER DATA.REQ
LID=link Address
LPDU={
PDU TYPE=Abort(4)
RA=0
TID=tid
DATA PORTION=result}
ABORT.IND
LID=link Address
ABORT.IND
LID=link Address

FIG. 59

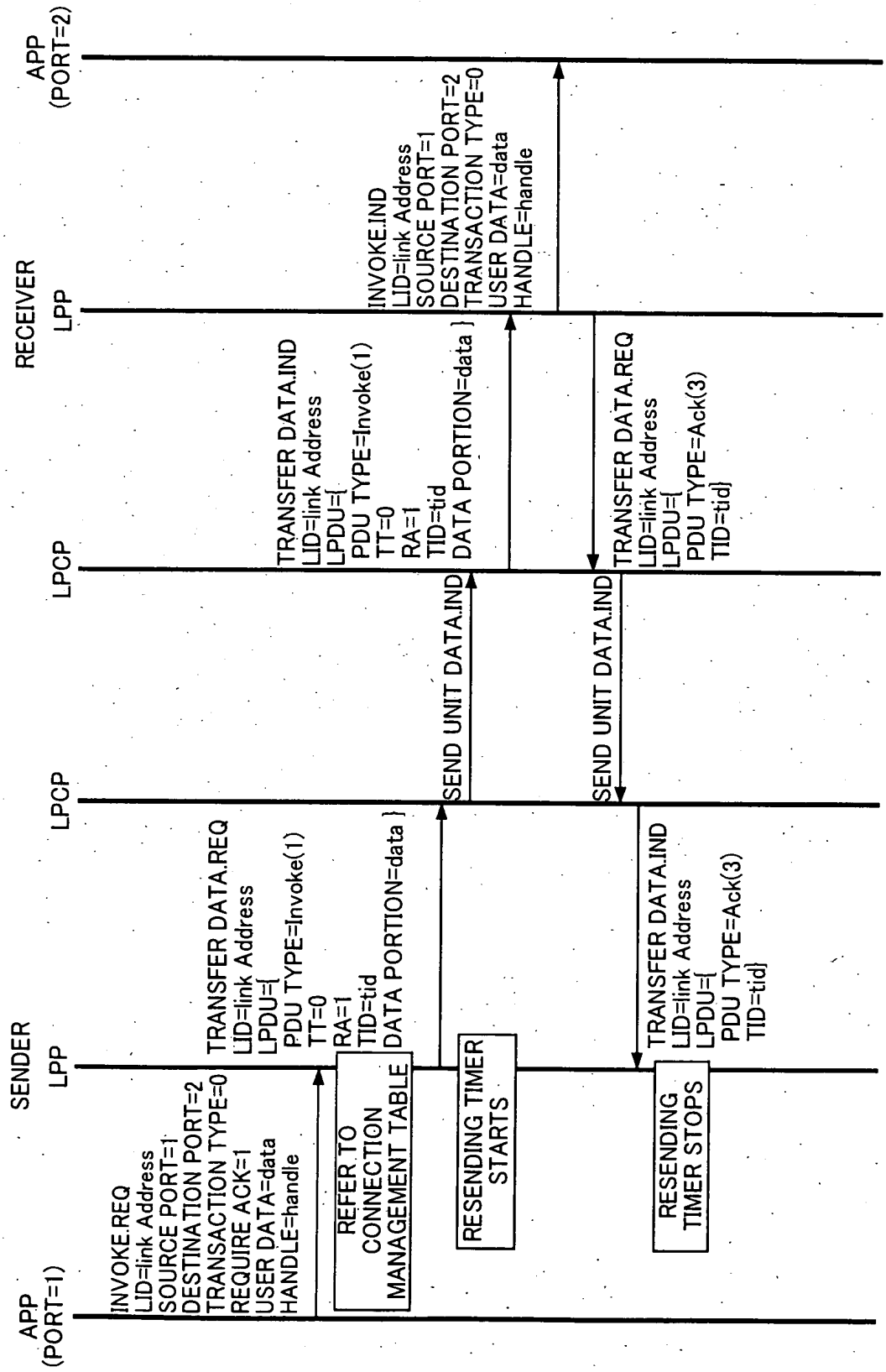

SENDER
RECEIVER
APP (PORT=1)
LPP
LPCP
LPCP
LPP
APP (PORT=2)
INVOKE.REQ
LID=link Address
SOURCE PORT=1
DESTINATION PORT=2
TRANSACTION TYPE=0
REQUIRE ACK=1
USER DATA=data
HANDLE=handle
REFER TO CONNECTION MANAGEMENT TABLE
TRANSFER DATA.REQ
LID=link Address
LPDU={
PDU TYPE=Invoke(1)
TT=0
RA=1
TID=tid
DATA PORTION=data }
SEND UNIT DATA.IND
RESENDING TIMER STARTS
TRANSFER DATA.IND
LID=link Address
LPDU={
PDU TYPE=Invoke(1)
TT=0
RA=1
TID=tid
DATA PORTION=data }
INVOKE.IND
LID=link Address
SOURCE PORT=1
DESTINATION PORT=2
TRANSACTION TYPE=0
USER DATA=data
HANDLE=handle
SEND UNIT DATA.IND
RESENDING TIMER STOPS
TRANSFER DATA.IND
LID=link Address
LPDU={
PDU TYPE=Ack(3)
TID=tid}
TRANSFER DATA.REQ
LID=link Address
LPDU={
PDU TYPE=Ack(3)
TID=tid}

FIG. 60

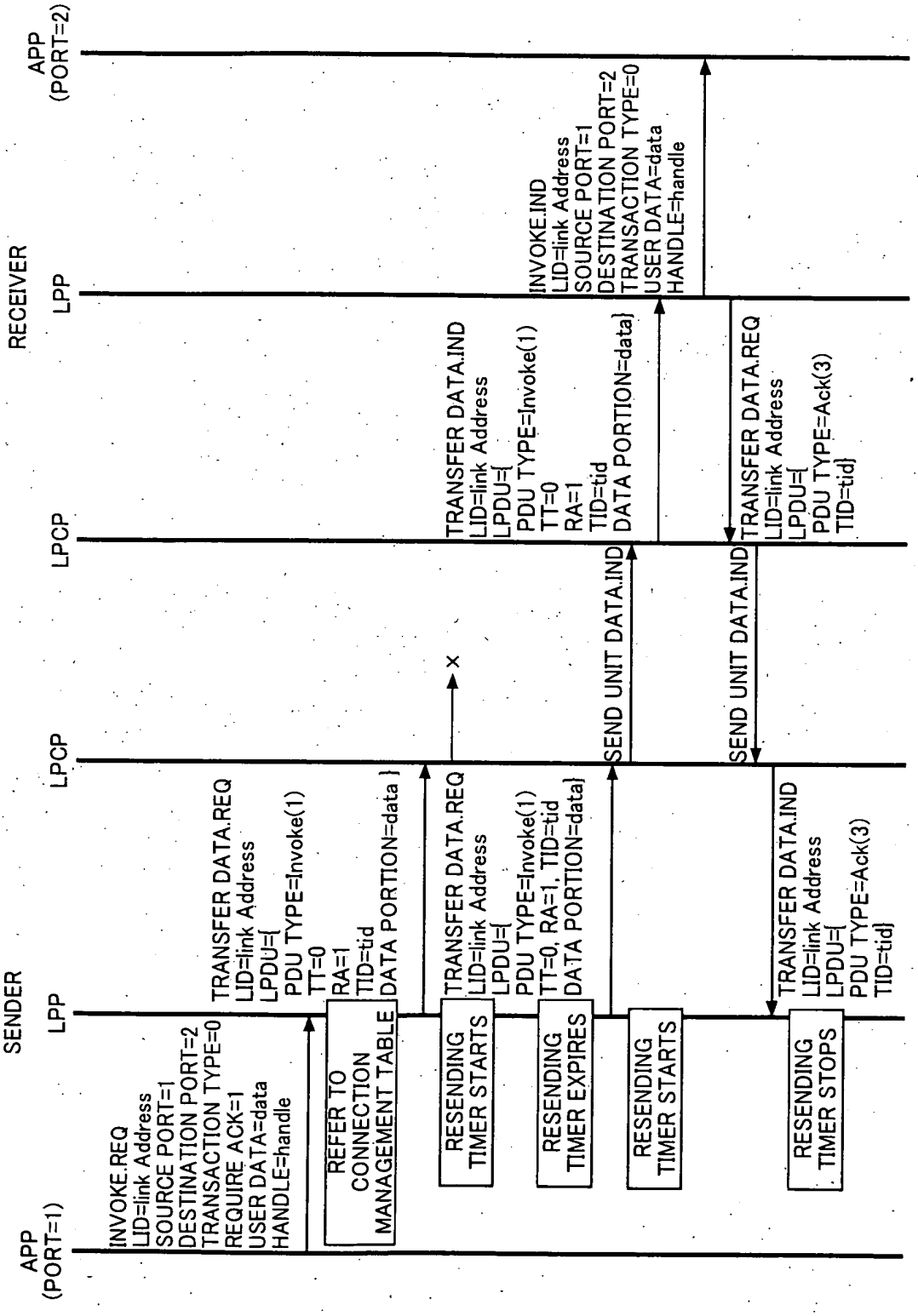

SENDER
RECEIVER
APP (PORT=1)
LPP
LPCP
LPCP
LPP
APP (PORT=2)
INVOKE.REQ
LID=link Address
SOURCE PORT=1
DESTINATION PORT=2
TRANSACTION TYPE=0
REQUIRE ACK=1
USER DATA=data
HANDLE=handle
REFER TO CONNECTION MANAGEMENT TABLE
TRANSFER DATA.REQ
LID=link Address
LPDU={
PDU TYPE=Invoke(1)
TT=0
RA=1
TID=tid
DATA PORTION=data }
RESENDING TIMER STARTS
TRANSFER DATA.REQ
LID=link Address
LPDU={
PDU TYPE=Invoke(1)
TT=0, RA=1, TID=tid
DATA PORTION=data}
RESENDING TIMER EXPIRES
SEND UNIT DATA.IND
RESENDING TIMER STARTS
SEND UNIT DATA.IND
TRANSFER DATA.IND
LID=link Address
LPDU={
PDU TYPE=Ack(3)
TID=tid}
RESENDING TIMER STOPS
TRANSFER DATA.IND
LID=link Address
LPDU={
PDU TYPE=Invoke(1)
TT=0
RA=1
TID=tid
DATA PORTION=data}
TRANSFER DATA.REQ
LID=link Address
LPDU={
PDU TYPE=Ack(3)
TID=tid}
INVOKE.IND
LID=link Address
SOURCE PORT=1
DESTINATION PORT=2
TRANSACTION TYPE=0
USER DATA=data
HANDLE=handle

FIG. 61

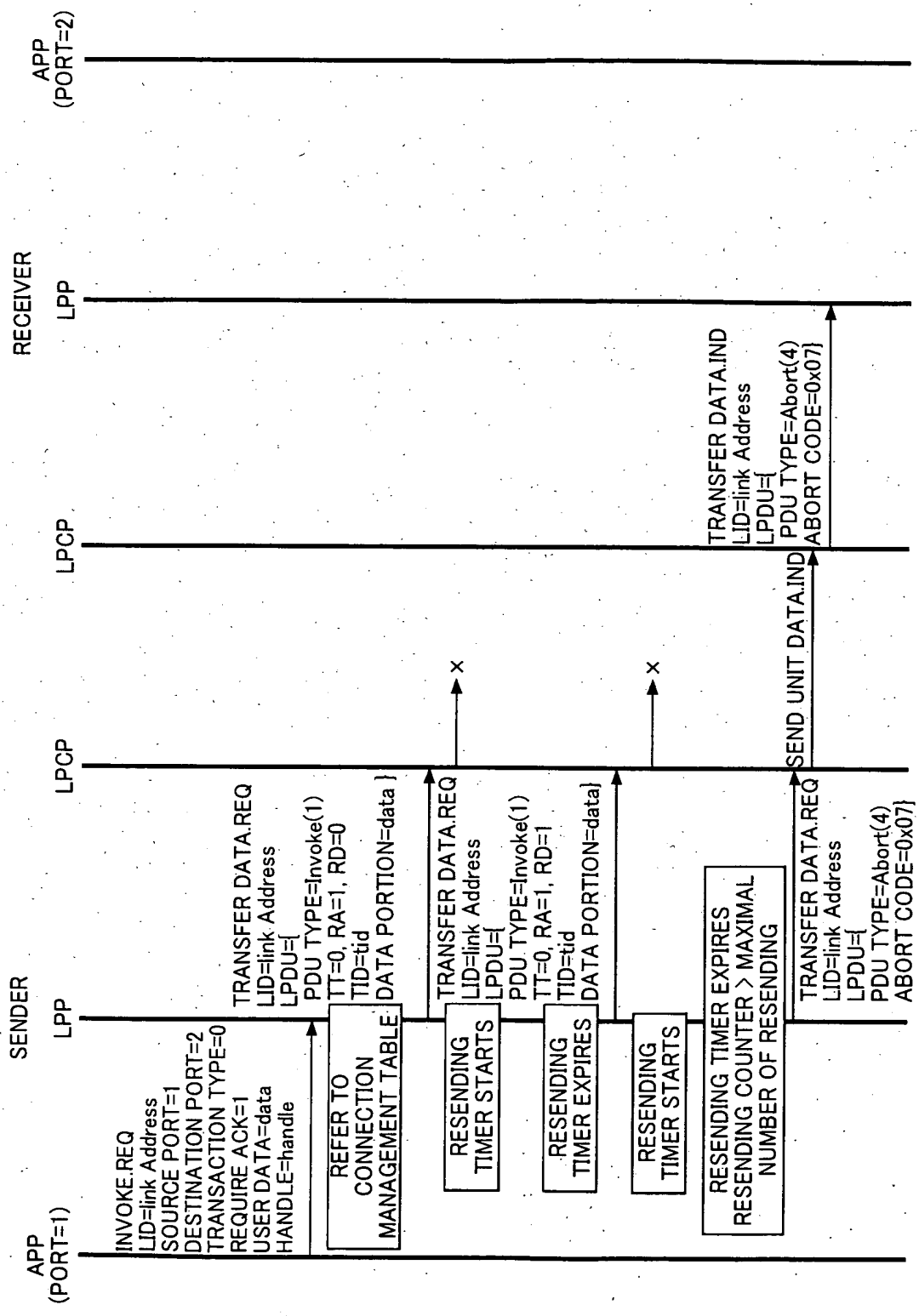

APP (PORT=1)
SENDER
LPP
LPCP
RECEIVER
LPCP
LPP
APP (PORT=2)
INVOKE.REQ
LID=link Address
SOURCE PORT=1
DESTINATION PORT=2
TRANSACTION TYPE=0
REQUIRE ACK=1
USER DATA=data
HANDLE=handle
REFER TO CONNECTION MANAGEMENT TABLE
TRANSFER DATA.REQ
LID=link Address
LPDU={
PDU TYPE=Invoke(1)
TT=0, RA=1, RD=0
TID=tid
DATA PORTION=data }
RESENDING TIMER STARTS
TRANSFER DATA.REQ
LID=link Address
LPDU={
PDU TYPE=Invoke(1)
TT=0, RA=1, RD=1
TID=tid
DATA PORTION=data}
RESENDING TIMER EXPIRES
RESENDING TIMER STARTS
RESENDING TIMER EXPIRES
RESENDING COUNTER > MAXIMAL NUMBER OF RESENDING
TRANSFER DATA.REQ
LID=link Address
LPDU={
PDU TYPE=Abort(4)
ABORT CODE=0x07}
SEND UNIT DATA.IND
TRANSFER DATA.IND
LID=link Address
LPDU={
PDU TYPE=Abort(4)
ABORT CODE=0x07}

FIG. 62

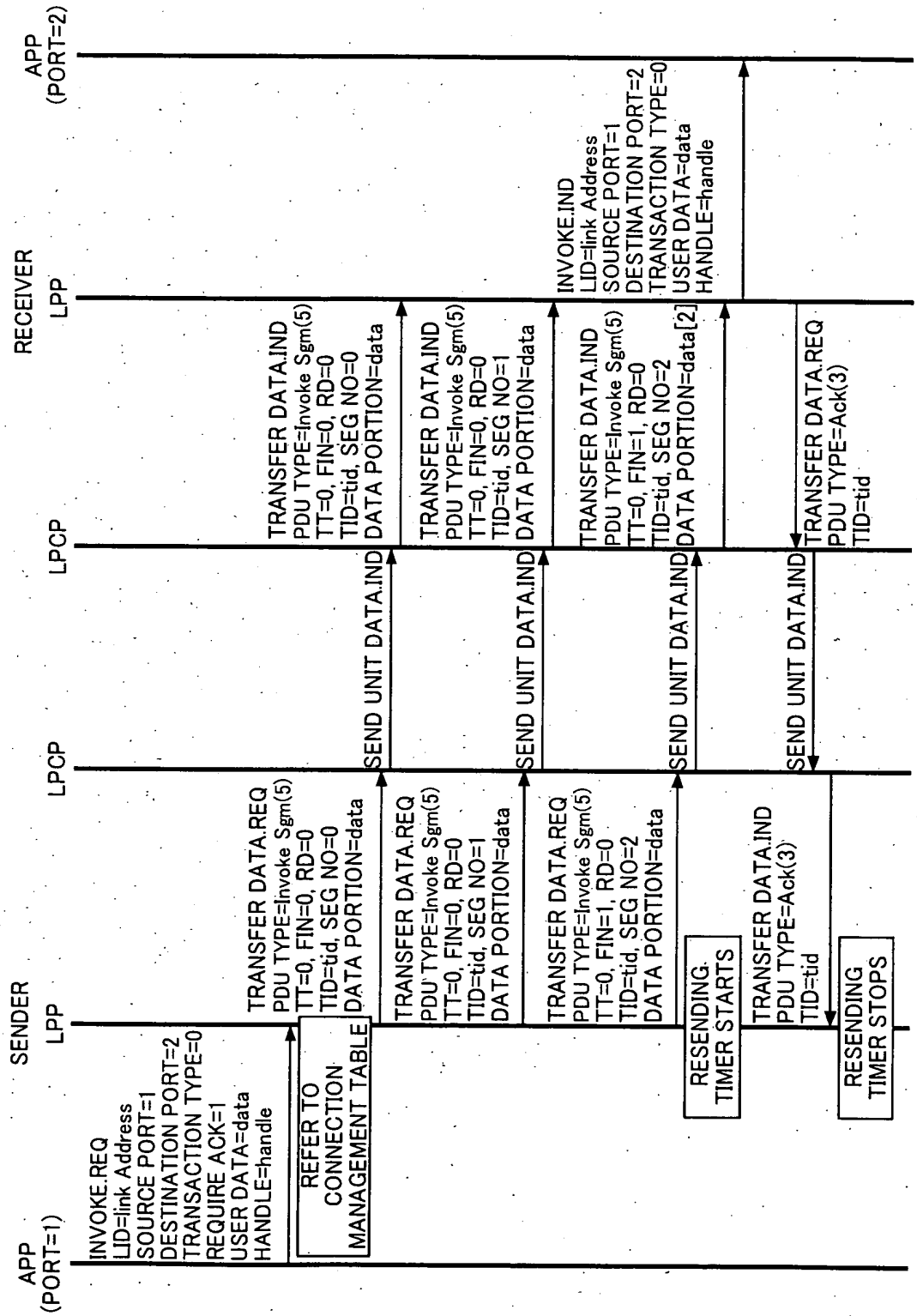

SENDER
RECEIVER
APP (PORT=1)
LPP
LPCP
LPCP
LPP
APP (PORT=2)
INVOKE.REQ
LID=link Address
SOURCE PORT=1
DESTINATION PORT=2
TRANSACTION TYPE=0
REQUIRE ACK=1
USER DATA=data
HANDLE=handle
REFER TO CONNECTION MANAGEMENT TABLE
TRANSFER DATA.REQ
PDU TYPE=Invoke Sgm(5)
TT=0, FIN=0, RD=0
TID=tid, SEG NO=0
DATA PORTION=data
SEND UNIT DATA.IND
TRANSFER DATA.IND
PDU TYPE=Invoke Sgm(5)
TT=0, FIN=0, RD=0
TID=tid, SEG NO=0
DATA PORTION=data
INVOKE.IND
LID=link Address
SOURCE PORT=1
DESTINATION PORT=2
TRANSACTION TYPE=0
USER DATA=data
HANDLE=handle
TRANSFER DATA.REQ
PDU TYPE=Invoke Sgm(5)
TT=0, FIN=0, RD=0
TID=tid, SEG NO=1
DATA PORTION=data
SEND UNIT DATA.IND
TRANSFER DATA.IND
PDU TYPE=Invoke Sgm(5)
TT=0, FIN=0, RD=0
TID=tid, SEG NO=1
DATA PORTION=data
TRANSFER DATA.REQ
PDU TYPE=Invoke Sgm(5)
TT=0, FIN=1, RD=0
TID=tid, SEG NO=2
DATA PORTION=data
SEND UNIT DATA.IND
TRANSFER DATA.IND
PDU TYPE=Invoke Sgm(5)
TT=0, FIN=1, RD=0
TID=tid, SEG NO=2
DATA PORTION=data[2]
RESENDING TIMER STARTS
TRANSFER DATA.IND
PDU TYPE=Ack(3)
TID=tid
SEND UNIT DATA.IND
TRANSFER DATA.REQ
PDU TYPE=Ack(3)
TID=tid
RESENDING TIMER STOPS

FIG. 63

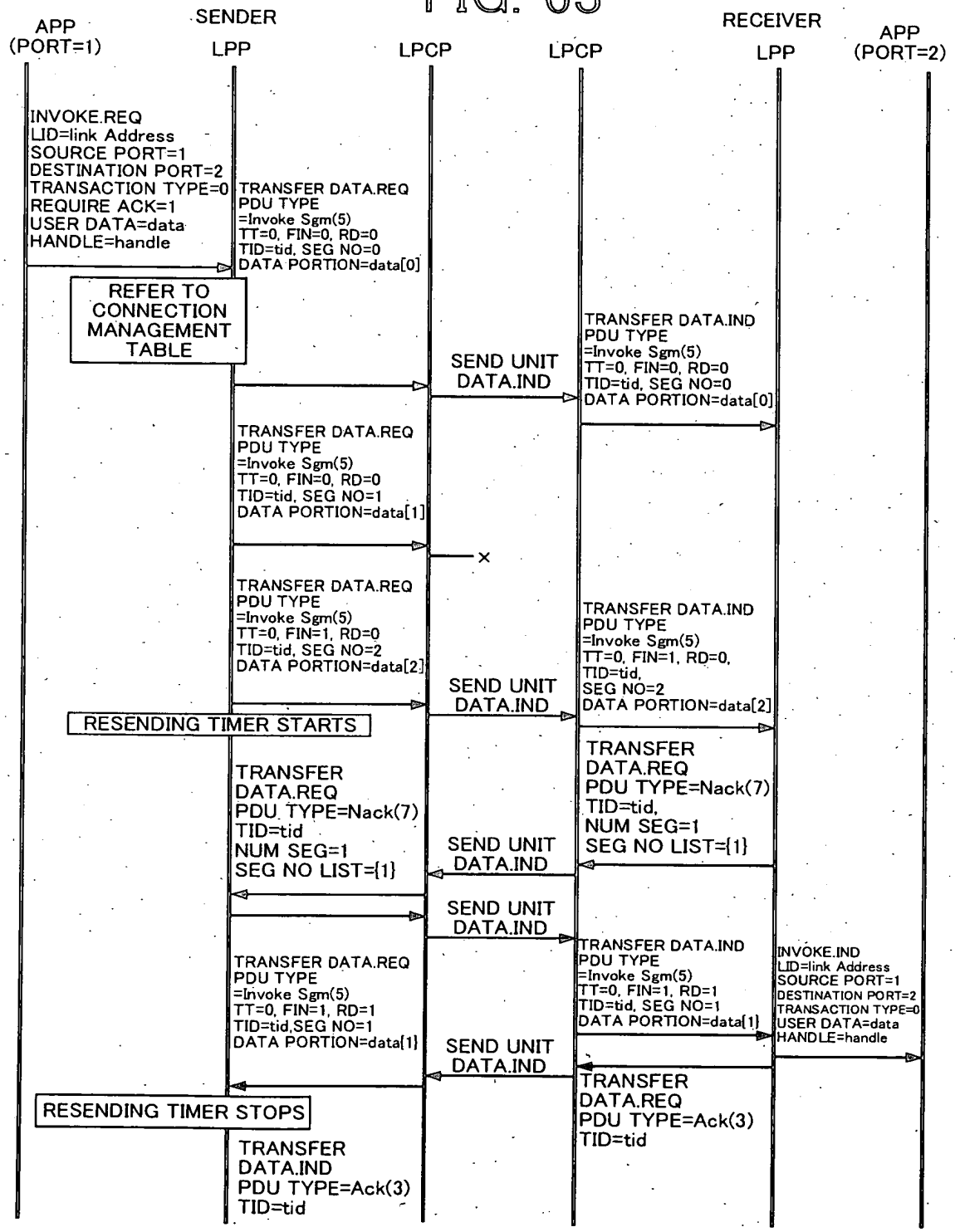

APP (PORT=1)
SENDER LPP
LPCP
LPCP
RECEIVER LPP
APP (PORT=2)
INVOKE.REQ
LID=link Address
SOURCE PORT=1
DESTINATION PORT=2
TRANSACTION TYPE=0
REQUIRE ACK=1
USER DATA=data
HANDLE=handle
TRANSFER DATA.REQ
PDU TYPE
=Invoke Sgm(5)
TT=0, FIN=0, RD=0
TID=tid, SEG NO=0
DATA PORTION=data[0]
REFER TO CONNECTION MANAGEMENT TABLE
SEND UNIT DATA.IND
TRANSFER DATA.IND
PDU TYPE
=Invoke Sgm(5)
TT=0, FIN=0, RD=0
TID=tid, SEG NO=0
DATA PORTION=data[0]
TRANSFER DATA.REQ
PDU TYPE
=Invoke Sgm(5)
TT=0, FIN=0, RD=0
TID=tid, SEG NO=1
DATA PORTION=data[1]
×
TRANSFER DATA.REQ
PDU TYPE
=Invoke Sgm(5)
TT=0, FIN=1, RD=0
TID=tid, SEG NO=2
DATA PORTION=data[2]
SEND UNIT DATA.IND
TRANSFER DATA.IND
PDU TYPE
=Invoke Sgm(5)
TT=0, FIN=1, RD=0,
TID=tid,
SEG NO=2
DATA PORTION=data[2]
RESENDING TIMER STARTS
TRANSFER DATA.REQ
PDU TYPE=Nack(7)
TID=tid
NUM SEG=1
SEG NO LIST={1}
TRANSFER DATA.REQ
PDU TYPE=Nack(7)
TID=tid,
NUM SEG=1
SEG NO LIST={1}
SEND UNIT DATA.IND
SEND UNIT DATA.IND
TRANSFER DATA.IND
PDU TYPE
=Invoke Sgm(5)
TT=0, FIN=1, RD=1
TID=tid, SEG NO=1
DATA PORTION=data[1]
INVOKE.IND
LID=link Address
SOURCE PORT=1
DESTINATION PORT=2
TRANSACTION TYPE=0
USER DATA=data
HANDLE=handle
TRANSFER DATA.REQ
PDU TYPE
=Invoke Sgm(5)
TT=0, FIN=1, RD=1
TID=tid,SEG NO=1
DATA PORTION=data[1]
SEND UNIT DATA.IND
TRANSFER DATA.REQ
PDU TYPE=Ack(3)
TID=tid
RESENDING TIMER STOPS
TRANSFER DATA.IND
PDU TYPE=Ack(3)
TID=tid

FIG. 64

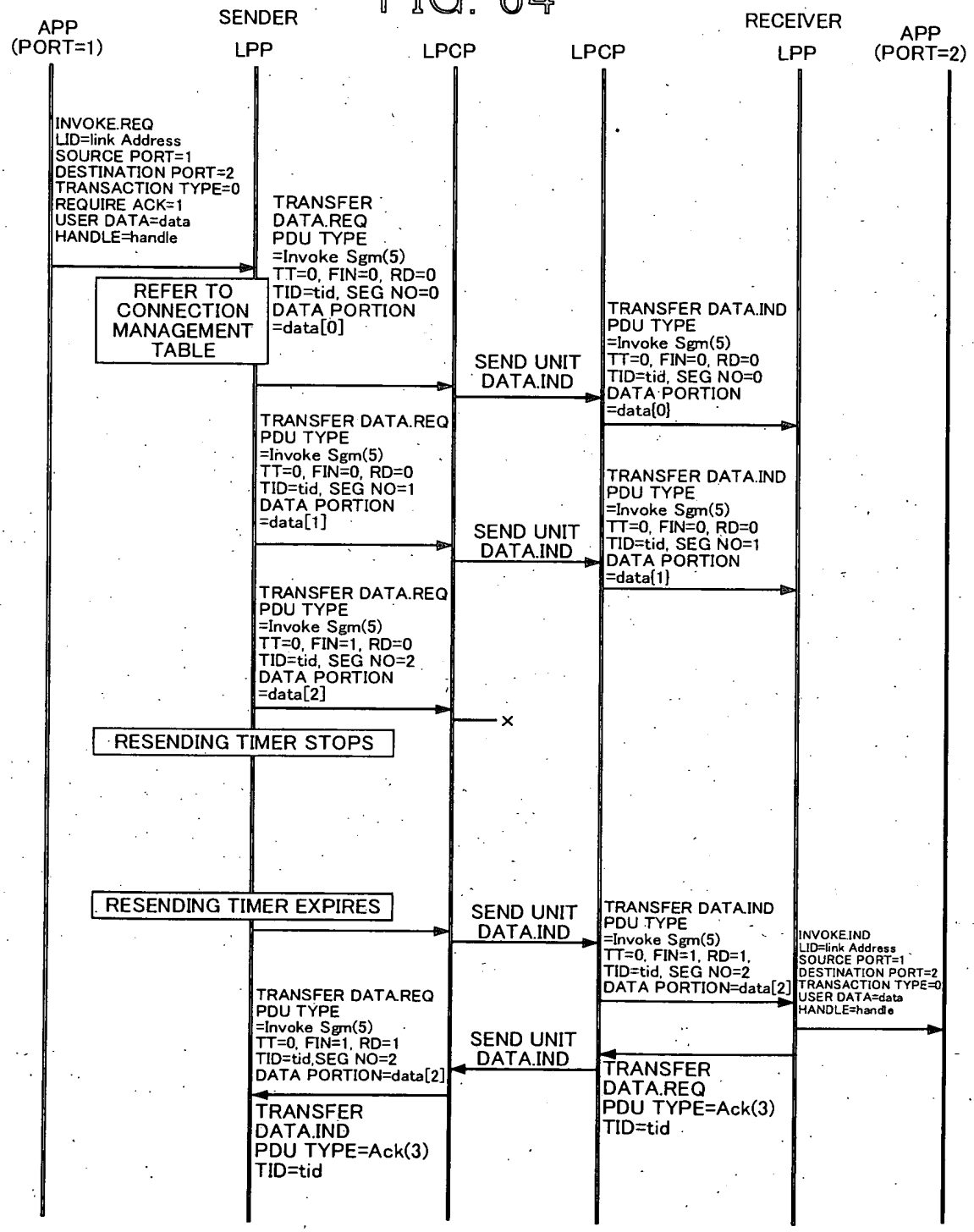

APP (PORT=1)
SENDER LPP
LPCP
LPCP
RECEIVER LPP
APP (PORT=2)
INVOKE.REQ
LID=link Address
SOURCE PORT=1
DESTINATION PORT=2
TRANSACTION TYPE=0
REQUIRE ACK=1
USER DATA=data
HANDLE=handle
TRANSFER DATA.REQ
PDU TYPE
=Invoke Sgm(5)
TT=0, FIN=0, RD=0
TID=tid, SEG NO=0
DATA PORTION
=data[0]
REFER TO CONNECTION MANAGEMENT TABLE
SEND UNIT DATA.IND
TRANSFER DATA.IND
PDU TYPE
=Invoke Sgm(5)
TT=0, FIN=0, RD=0
TID=tid, SEG NO=0
DATA PORTION
=data[0]
TRANSFER DATA.REQ
PDU TYPE
=Invoke Sgm(5)
TT=0, FIN=0, RD=0
TID=tid, SEG NO=1
DATA PORTION
=data[1]
SEND UNIT DATA.IND
TRANSFER DATA.IND
PDU TYPE
=Invoke Sgm(5)
TT=0, FIN=0, RD=0
TID=tid, SEG NO=1
DATA PORTION
=data[1]
TRANSFER DATA.REQ
PDU TYPE
=Invoke Sgm(5)
TT=0, FIN=1, RD=0
TID=tid, SEG NO=2
DATA PORTION
=data[2]
×
RESENDING TIMER STOPS
RESENDING TIMER EXPIRES
SEND UNIT DATA.IND
TRANSFER DATA.IND
PDU TYPE
=Invoke Sgm(5)
TT=0, FIN=1, RD=1,
TID=tid, SEG NO=2
DATA PORTION=data[2]
INVOKE.IND
LID=link Address
SOURCE PORT=1
DESTINATION PORT=2
TRANSACTION TYPE=0
USER DATA=data
HANDLE=handle
TRANSFER DATA.REQ
PDU TYPE
=Invoke Sgm(5)
TT=0, FIN=1, RD=1
TID=tid,SEG NO=2
DATA PORTION=data[2]
SEND UNIT DATA.IND
TRANSFER DATA.REQ
PDU TYPE=Ack(3)
TID=tid
TRANSFER DATA.IND
PDU TYPE=Ack(3)
TID=tid

FIG. 65

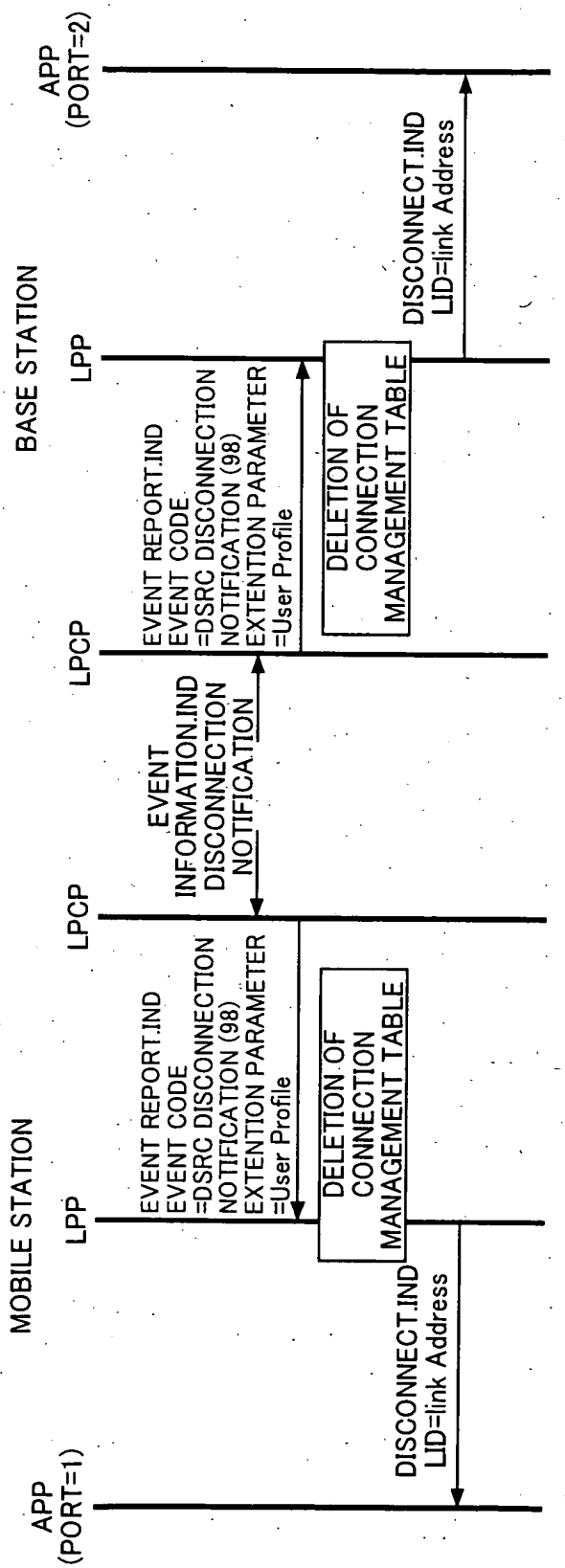
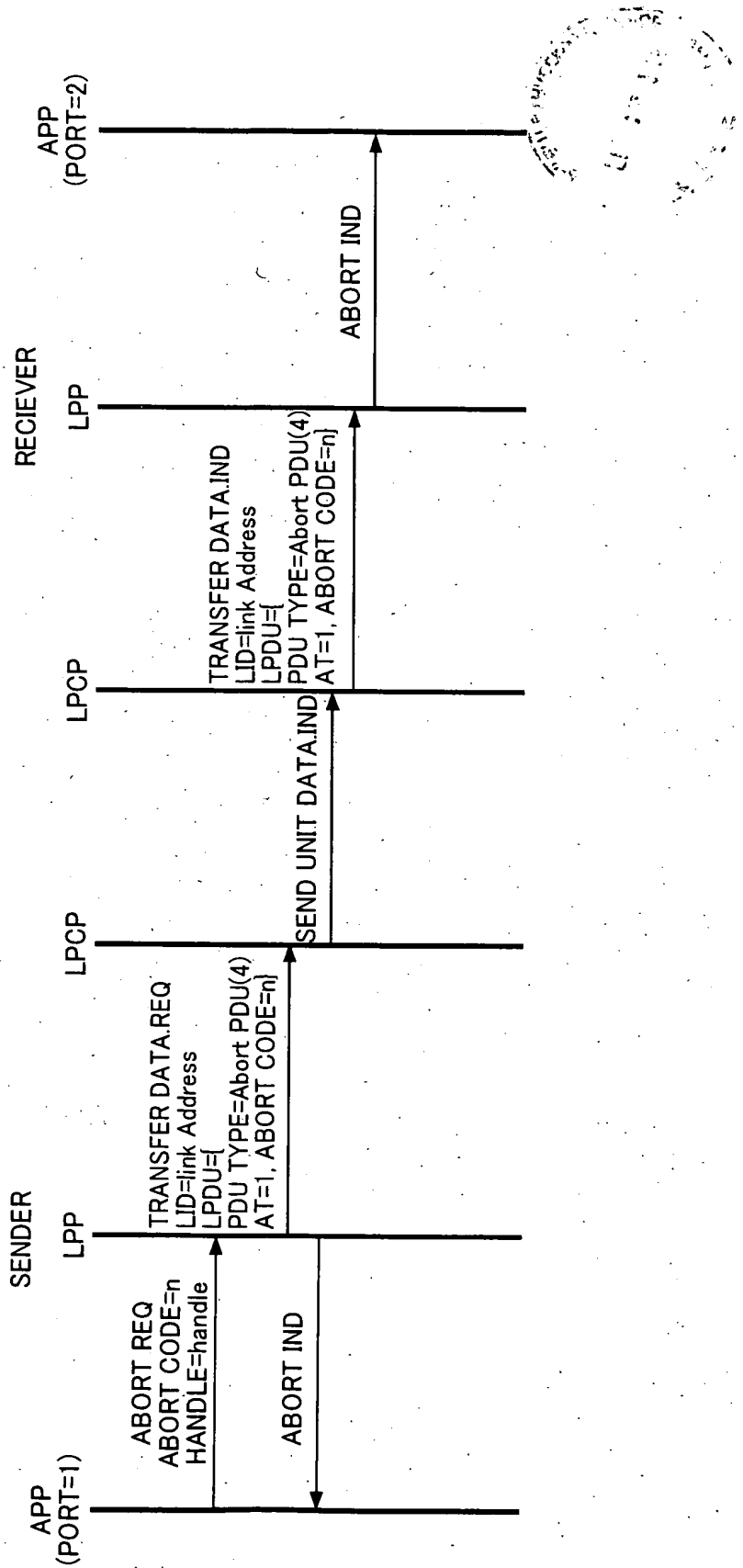

APP (PORT=2)
BASE STATION
LPP
LPCP
DISCONNECT.IND LID=link Address
DELETION OF CONNECTION MANAGEMENT TABLE
EVENT REPORT.IND EVENT CODE =DSRC DISCONNECTION NOTIFICATION (98) EXTENTION PARAMETER =User Profile
EVENT INFORMATION.IND DISCONNECTION NOTIFICATION
LPCP
LPP
MOBILE STATION
EVENT REPORT.IND EVENT CODE =DSRC DISCONNECTION NOTIFICATION (98) EXTENTION PARAMETER =User Profile
DELETION OF CONNECTION MANAGEMENT TABLE
DISCONNECT.IND LID=link Address
APP (PORT=1)

FIG. 66


SENDER
RECIEVER
APP (PORT=1)
LPP
LPCP
LPCP
LPP
APP (PORT=2)
ABORT REQ
ABORT CODE=n
HANDLE=handle
TRANSFER DATA.REQ
LID=link Address
LPDU={
PDU TYPE=Abort PDU(4)
AT=1, ABORT CODE=n}
SEND UNIT DATA.IND
TRANSFER DATA.IND
LID=link Address
LPDU={
PDU TYPE=Abort PDU(4)
AT=1, ABORT CODE=n}
ABORT IND
ABORT IND